1972

Public supported instruction in economics of farm business management in Iowa

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Public supported instruction in economics of farm business management in Iowa

by

Ted Durst Ward

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Major: Agricultural Education

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa

1972

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INTRODUCTION

There is a cliche' that suggests man is the key to management. If that man is a farmer, rancher, or farm or ranch manager, he becomes the key to farm management. The kind of management decisions this man reaches will determine his economic position in farm business management.

Public and private institutions over the years have provided educational programs in the instructional area of economics of farm business management. Evaluation of those institutional programs to determine the content and emphasis will help to determine the effectiveness, strengths, weaknesses, overlappings, or deficiencies. One cannot look upon the past to reflect the future; however, future programs in economics of farm business management are dependent upon accomplishments or failures of the past.

Educational Development in America

Education in America was present prior to the landing of the Mayflower at Plymouth Rock in 1492. Historians suggest that the initiatory rites conducted by primitive Indians began primitive education. It can be assumed those early learners followed the procedures and patterns of the elders and superiors.

Monroe (21) suggests that education from the days of the Mayflower landing to the close of the Colonial period operated on a laissez-faire plan. This plan suggested every man is responsible for the care and

education of those dependent on him.

The apprenticeship plan became the most used educational system from the period of statehood to the beginning of the second quarter of the nineteenth century. However, in the early 1800's the Industrial Revolution begun. The rapid development of power machinery and the increased demands for goods led to a greater demand for labor than could be met by the apprenticeship program.

Demands were made for higher education in agriculture and engineering in the mid-nineteenth century. This demand was met by the passage of the Morrill Act of 1862 (34). The Act granted 30,000 acres of public land for each senator and representative a state had in Congress at the time of the passage of the Act or at the time it was admitted to the Union following the Act. The proceeds of the sale of those grants were to provide for the endowment and support of at least one college in each state. The second Morrill Act--dated 1890--provided the first direct federal allocation of funds for each land grant college.

Development of vocational agriculture programs

The Massachusetts legislature, in 1905, authorized a Commission to investigate needs for different skill levels and responsibility in the various industries of the state. The education commission later to be known as the "Douglas Commission" become a history making document as a result of the Commission's findings. The Douglas Commission:

1. recommended that cities and towns "so modify the work in the elementary schools as to include for boys and girls instruction and practice in the elements of productive industry, including agriculture and the mechanics and domestic arts, and that the instruction in mathematics, the sciences, and

drawing should show the application and use of these subjects in industrial life."

2. recommended that all "towns and cities provide, by new elective industrial courses in high schools, instruction in the principles of agriculture and the domestic and mechanic arts; that, in addition to day courses, cities and towns provide evening courses for persons already employed in trades; and that provisions be made for instruction in part-time day classes of children between and ages of 14 and 18 years who may be employed during the remainder of the day."

3. recognized that there should be no interference with the public school system; yet the elements of industrial training, agriculture, domestic, and mechanical sciences, should be taught in the public schools; yet there should be, in addition to this elementary teaching, distinctive industrial schools separated entirely from the public school system (11, pp. 34, 35).

Vocational education was beginning to gain momentum. Educators saw in the movement for vocational education a means of: (1) reducing the scrap heap of human life, (2) reaching underprivileged children, and (3) democratizing the public schools of this country. The Congress did not share this optimism for during the period of 1901 through 1913, a number of bills were introduced in the Congress but each failed to be enacted. The failure of the Pollard bill, Davis bill, Dolliver-Davis bill, and Page-Wilson bill to be enacted indicated the difficulties encountered to determine the relationship of the United States Government to the states towards providing sources of federal assistance for vocational education training. When it became apparent little progress was being achieved, a group of interested citizens known as The National Society for the Promotion of Industrial Education suggested that Congress by joint resolution, establish a commission on national aid to vocational education. In January of 1914, Woodrow Wilson, President of the United

States, approved such a resolution.

The Commission on National Aid to Vocational Education (27) held numerous conferences and recommended federal aid:

1. for training teachers of agriculture, of trade and industrial, and of home economics subjects,

2. for paying part of the salaries of teachers of agricultural and of trade and industrial subjects,

3. for studies and investigations (27, p. 130).

Following tradition, the Commission's report was referred to Senator Hoke Smith, Chairman of the Senate Committee on Education and to Congressman Dudley Hughes, Chairman of the House Committee on Education. Each body of Congress passed the legislation; however, action by the Senate House Education Conference committee was slow.

Even though Congress ignored the first two appeals by President Wilson for resolving the Senate-House differences, neither house could ignore the third appeal made during President Wilson's annual address to Congress on December 5, 1916, saying:

> At the last session of the Congress a bill was passed by the Senate which provides for the promotion of vocational and industrial education; and which is of vital importance to the whole country because it concerns a matter too long neglected, upon which the thorough industrial preparation for the critical years of economic development immediately ahead of us in very large measure depends. May I not urge its early and favorable enactment into law. It contains plans which affect all interests and all parts of the country, and I am sure that there is no legislation now pending before the Congress whose passage the country awaits with more thoughtful approval or greater impatience to see a great and admirable thing set in the way of being done (11, p. 88).

On February 23, 1917, ten years after the introduction of the first Davis Bill, the attempt to obtain federal aid for vocational education

became reality when President Wilson affixed his signature to the National Vocational Education Act (more commonly known as the Smith-Hughes Act).

The passage of the Smith-Hughes Act began a new era in education. The Act encouraged the states to undertake for their constituents a new and vital kind of education in cooperation with the federal government.

The Smith-Hughes Act (38) authorized the training of males at secondary school level in the field of vocational agriculture. The Act also authorized training in trade and industry, and home economic subjects. The Act appropriated funds from the federal treasury to the states for the purpose of cooperating with the states in paying the salaries of supervisors and directors of agricultural subjects, and in the preparation of teachers of agriculture, trade and industry, and home economics subjects. From those federal appropriations, assistance was extended from the states for the purpose of cooperating with the local secondary schools in paying the salaries of teachers in agriculture, trade and industry, and home economics subjects.

For two and one-fourth decades following the passage of the Smith-Hughes Act, the Congress of the United States passed a number of Acts relative to some aspect of vocational education. In substance, those Acts have included amendments and/or extensions of the Smith-Hughes Act.

The George-Deen Act (39), in 1937, expanded vocational training and authorized a substantial increase in funds--up to $12 million annually--on a continuing basis in those areas included in the Smith-Hughes Act.

The George-Barden Act (40) of 1946 authorized increased appropriations; however, even more significant was the flexibility and broadened

use of those funds the Act authorized.

Vocational agriculture training from its start in 1917 had changed very little and the subsequent Acts authorized continued training for proficiency in the field of production agriculture. However, in early 1961, President of the United States John F. Kennedy in his State of the Union message to Congress said:

> The National Vocational Education Acts have provided a program of training for industry, agriculture, and other occupational areas. The basic purpose of our vocational education effort is sound and sufficiently broad to provide a basis for meeting future needs. However, the technological changes which have occured in all occupations call for a review toward their modernization.
>
> To that end, I am requesting the Secretary of Health, Education, and Welfare to convene an advisory body to be charged with the responsibility of reviewing and evaluating the current National Vocational Education Acts, and making recommendations for improving and redirecting the program (43, p. 5).

The Panel of Consultants, in their report to President Kennedy, identified several areas that needed to be improved in order to update existing programs. The Panel suggested the need for post-high school programs that will provide technical training for new jobs created by automation in industry.

Based upon the suggestions and recommendations of the Panel of Consultants, the Congress of the United States passed the Vocational Education Act of 1963 (41). The purpose of the Vocational Education Act of 1963 was to:

> . . . authorize federal grants to states to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities

> of the state--those in high school, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps--will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training (42, p. 61).

A modern up-to-date interpretation of the principles of vocational education was adopted when Lyndon B. Johnson, President of the United States, signed into law the Vocational Education Amendments of 1968.

It is interesting to observe how the term vocational education has changed in definition over the years. In its infancy, vocational education was considered learning how to work. Following the George-Barden Act, vocational education was looked upon as systematic instruction designed to develop the skills and abilities directly related to the more common occupations not including those generally considered professional.

The report of the Panel of Consultants prior to the 1963 Act suggested the term vocational refer to all formal instruction for both youth and adults, at the high school, post-high school, and out-of-school levels, which prepares individuals for initial entry into and advancement within an occupation or group of related occupations but it does not refer to instruction leading directly to a baccalaureate or professional degree.

In the Vocational Education Amendments of 1968, the term vocational is defined to mean:

> vocational or technical training or retraining which is given in schools and classes under public supervision and control or under contract with a state board or local educational agency and is conducted as part of a program designed to prepare individuals for gainful employment as semi-skilled or skilled workers or technicians or sub-professionals in recognized occupations and in

> new and emerging occupations or to prepare individuals for enrollment in advanced technical education programs, but excluding any program generally considered professional, or which requires a baccalaureate or higher degree (28, p. 465).

Development of county cooperative extension programs

The county cooperative extension service as it is known today has passed through several stages of development beginning in 1785. At that time the Philadelphia Society (35) was formed to acquaint those members with those happenings to improve agriculture.

The Massachusetts Society for Promoting Agriculture was formed in 1792 for the purpose of forwarding improvements in agriculture. The numerous agricultural societies, formed in the early half of the nineteenth century, were instrumental in: (1) initiating fairs where animals and farm products were exhibited for educational evaluation, (2) providing speakers for activities sponsored by the societies, and (3) training persons to go forth and instruct farmers.

The Ohio legislature in 1846 created the Ohio State Board of Agriculture. During the period of 1846 to 1900, many states enacted legislation creating State Boards of Agriculture. In 1861, the state law reorganizing the Michigan Agricultural College--originally established in 1855--was passed. Then in 1859, Representative J. A. Morrill of Vermont introduced and secured passage through Congress the bill creating state agricultural and mechanical colleges; however, President James Buchanan vetoed the bill. Senator Morrill reintroduced the Morrill Act (11) and it was repassed by Congress and signed by President Abraham Lincoln in 1862. The second Morrill Act (11) was passed in 1890.

The importance of those Acts were discussed previously.

Congress passed the Hatch Act (11) in 1887 providing for each state to establish a state agricultural experiment station. Monies from the federal treasury were appropriated annually to support research and experimentation. The Adams Act of 1906 (11) increased the annual appropriation authorized by the Hatch Act and expanded experimentation to include the agricultural industry.

The early Farmers' Institutes from 1853 to 1879 stressed farmers' clubs with weekly meetings and admission fees. Amasa Walker, in an address on "The farmer's wants" stated:

> . . . such farmer clubs should (1) discuss agricultural matters among themselves, (2) purchase agricultural books which might be read and commented on at meetings, (3) established a series of lectures on agriculture, agricultural chemistry and geology, and (4) conduct classes, especially of young farmers, for the study of agricultural textbooks (35, p. 6).

The Farmers' Institutes continued to develop during the period of 1880 to 1900 as a result of financial assistance received from its respective state. At the start of the 20th Century and until 1915, the Farmers' Institutes benefited, through federal assistance. After the passage of the Smith-Lever Extension Act, the Farmers' Institutes became history.

The Office of Farm Management (35) was organized in the Bureau of Plant Industry in 1906. The Office of Farm Management had the authority and funds to:

> . . . investigate and encourage the adoption of improved methods of farm management and farm practice,
>
> . . . place agents in districts, usually comprising two or more

> States, to investigate farm management problems and to study the prevailing types of farming (35, p. 73).

To encourage the adoption of the more profitable types of farming and improved farm practices, the Office of Farm Management distributed agricultural bulletins, held farmer institutes, provided articles for newspaper publicity, gave agricultural demonstrations, and provided on-farm field training.

The work involved in conducting the Farmers' Institutes and other forms of agricultural extension work, in which the land-grant colleges participated, increased so rapidly that there arose a demand for federal appropriations by the Association of American Agricultural Colleges and Experiment Stations in 1908. In 1909 a bill was introduced in the House by Congressman McLaughlin, a member of the Committee of Agriculture. A similar bill in 1910 was introduced in the Senate by Senator Dolliver of Iowa, chairman of the Committee on Agriculture and Forestry. Federal legislation for implementation of an agricultural extension service encountered the same legislative difficulties as did the proposed legislation as previously discussed on vocational education. It was not until 1914 that the controversial Agricultural Extension Act (37)--known as the Smith-Lever Act--was adopted.

The Agricultural Extension Act supported federal assistance for the extension training of farmers and their families in agriculture and home economics. The Agricultural Extension Act reads in part:

> . . . cooperative agricultural work shall consist of the giving of instruction and practical demonstration in agriculture and home economics to persons not attending or resident in the college in the several communities, and imparting to such persons information on such subjects through field demonstrations, publications, and otherwise,

> . . . provides continuous annual appropriations to match with a federal dollar every state dollar spent for extension training,
>
> . . . focus its attention on the development of extension training for the "dirt farmer" rather than upon professional training in agriculture of college grade. Service to the employed farmer is just as clearly vocational training as the instruction given urban workers in part-time and evening classes (11, p. 76).

Acts which followed the original Smith-Lever Act and basically increased appropriations were the Purnell Act in 1935, the Capper-Ketcham Act in 1928, and the Bankhead-Jones Act in 1925. The 83rd Congress in June, 1953, passed Public Law 83 which incorporated the previous Acts into a single Act thus consolidating and simplifying the reading of all the Acts. The Cooperative Extension Service as we know it today resulted from the Amendments of 1962 to Public Law 83 as discussed above.

Cooperative extension service in agriculture and home economics in Iowa began in 1906 with the Iowa Agricultural Extension Act (14), expanded in 1913 with the passage of the Iowa Farm Aid Association Act (14), and adopted a memorandum of understanding with the United States Department of Agriculture following the Smith-Lever Act of 1914. From 1918 until May of 1955, county Farm Bureau organizations sponsored the county cooperative extension service educational programs. Then in May, 1955, the County Agricultural Extension Law was enacted by the Iowa Legislature creating county extension districts and authorizing elected county agricultural extension councils.

Development of post-secondary area school programs

Schools of a vocational nature were organized in the mid-nineteenth century to provide instruction for students whose place of residence was

outside the school's immediate community. Congressional district agricultural schools were established in Alabama in 1880 and by other states in later years. New Jersey in 1913 established county vocational schools. Area programs were first established on a regional basis in Connecticut in 1910, after which these programs continued to grow in number. Louisiana established the first state wide program of area vocational schools in 1934.

No specific reference was made in regard to post-secondary area school programs from the passage of the Smith-Hughes Act until Russia's advancement in space technology startled Americans in the mid-1950's. Title VIII of the National Defense Education Act of 1958, entitled, Area Vocational Education Programs, was attached as an amendment--Title III--to the George-Barden Act of 1946. The Title III amendment authorized a program for highly skilled technicians in vocations necessary for the national defense.

The Vocational Education Act of 1963 broadened the definition of post-secondary area schools resulting in increased impetus in such schools. The Vocational Education Amendments of 1968 reemphasized the importance of the post-secondary area school programs.

The State of Iowa in 1966 passed legislation authorizing the establishment of not more than 20 areas which may operate area vocational schools and/or area community colleges. The legislation defined vocational schools to mean:

> . . . a publicly supported school which offers as its curriculum or part of its curriculum vocational or technical education, training, or retraining available to persons who are attending high school who will benefit from such education or training who do

> not have the necessary facilities available in the local high schools; persons who have entered the labor market but are in need of upgrading or learning skills; and persons who due to academic, socio-economic, or other handicaps are prevented from succeeding in regular vocational or technical education programs (12, p. 1042).

There exists in Iowa eleven area community colleges--defined by legislation to mean:

> . . . a publicly supported school which meets the curriculum requirements of a junior college and which offers in whole or in part curriculum of a vocational school (12, p. 1042)--

and four area-vocational/technical schools.

Need for the Study

Recent federal and state legislation authorizing the formation of post-secondary area schools and/or community colleges has added a new dimension to public supported instruction provided in Iowa. Many of these post-secondary institutions have established programs in economics of farm business management. Furthermore, several of those programs parallel rather closely existing programs conducted by vocational agriculture departments and by county cooperative extension service. Questions have arisen as to the similarities and differences with respect to the program objectives, content, and emphasis among those public supported institutions. A need exists to study the programs in economics of farm business management in Iowa to ascertain the role of those programs and assess the need for curriculum revision.

Another change taking place in Iowa has been the shift of population from rural to urban centers. With advances continuing in agricultural technology, and the replacement of labor by capital, the number of farm

families has continued to decline. The United States Census of Agriculture (36) reveals the number, average size, and value of farms; average age of farmers; and number of farmers who work 100 or more days off-farm in Iowa as cited herein:

Year	Number of farms	Average farm size	Value of farms	Average age of farmers	Work 100 days or more off-farm
1969	140,354	239.1	13,150,363,081	48.5	32,570
1964	154,162	219.0	9,180,809,586	48.5	25,480
1959	174,707	193.6	8,586,849,050	47.6	23,679

One of the changes that has taken place is the increase in the number of agricultural occupations other than farming. The off-farm phase of agriculture included the industries and businessess that contribute to economics of farm business management. A number of studies have been conducted by the Department of Agricultural Education at Iowa State University assessing employment opportunities that exist in farming and in other agribusiness occupations and suggesting levels of agricultural competence needed to perform in the various occupations. Personnel in the three public supported institutions need to assess other agribusiness occupations as they evaluate programs in the economics of farm business management.

Purpose of the Study

The major purpose of this study was to determine content and emphasis placed on identified units of instruction in the economics of farm business management by Iowa's public supported institutions and personnel in

the various economic areas during the period of July 1, 1970 through June 30, 1971.

The specific objectives of the study were:

1. To determine the content and emphasis in specific units of economics of farm business management instruction provided by the secondary schools, the county cooperative extension service, and by the post-secondary area school programs in Iowa.
2. To determine if the content and emphasis in specific units of such instruction provided by the vocational agriculture departments varies among the economic areas of Iowa.
3. To compare the content and emphasis in specific units of such instruction provided to the various secondary school classes by the vocational agriculture departments among the economic areas in Iowa.
4. To compare the content and emphasis in specific units of such instruction provided for young and adult farmers by the vocational agriculture departments among the economic areas in Iowa.
5. To compare the relationship of selected vocational agriculture department and instructor variables with the amounts of instruction provided in the economics of farm business management by the vocational agriculture departments among the economic areas in Iowa.
6. To determine if the content and emphasis in specific units

of the economics of farm business management instruction provided by the county cooperative extension services varies among the economic areas of Iowa.

7. To compare the content and emphasis in specific units of such instruction provided for youth and adults by the county cooperative extension service among the economic areas in Iowa.
8. To compare the relationship of selected county and extension director variables with the amounts of instruction in the economics of farm business management provided by the county cooperative extension services among the economic areas in Iowa.
9. To compare the content and emphasis placed in specific units of instruction provided in the economics of farm business management instruction among the nine post-secondary area schools that provided such instruction in 1970-71.

This study was conducted by the researcher in cooperation with the Department of Agricultural Education, the Iowa Agriculture and Home Economics Experiment Station of Iowa State University, and the Agricultural Education Section and the Post-Secondary Section of the Career Education Division of the State Department of Public Instruction under a research grant from the Iowa Agricultural and Home Economics Experiment Station, Project 1879, Iowa State University. This study was an in-depth analysis of a larger study entitled, "Educational Programs to Meet the Manpower Needs of Iowa Agriculture."

It is hoped that the information gained from this study will be valuable in the analysis of the larger project. Furthermore, information gained from this study should provide insight and guidance in developing and revising agricultural education curricula, especially with reference to instruction in the economics of farm business management provided by the vocational agriculture departments, the county cooperative extension service and by the post-secondary area schools.

REVIEW OF LITERATURE

A review of literature revealed little has been done to assess the content and emphasis placed upon the instruction in identified units in the economics of farm business management provided by public supported institutions and personnel. However, extensive research has been conducted concerning aspects and phases of programs relating to public supported institutions and personnel. In the literature related to this study, four general categories appeared as being appropriate. Consequently, this review has been divided into the following parts: (1) curriculum content, (2) competencies in agribusiness, (3) coordination of programs, and (4) manpower needs in farm management.

Curriculum Content

A study was undertaken in Wisconsin by Pumper (26) to determine the subject matter units being taught and the extent the programs were contributing to meeting the national objectives of vocational agriculture. Data were obtained by a questionnaire given to a 60 percent randomly selected group of vocational agriculture instructors in each of Wisconsin's four economic areas.

The author observed that 97.8 percent of the instructional time was divided among the subject matter areas as follows: farm business management (18.3 percent), animal science (22.2 percent), plant science (12.8 percent), soil science (8.3 percent), agricultural mechanics (23.3 percent), off-farm agriculture (7.1 percent), careers (3.2 percent), and

leadership (2.6 percent).

The farm business management and mean number of periods (each period ranges from 50 to 60 minutes in length) of instruction provided were: farming programs (13.6), farm records--accounts (13.7), analysis of DHIA records and performance records (8.3), income tax (6.6), marketing (13.7), cooperatives (11.3), shall I be a farmer (3.9), successful farmer characteristics (3.6), getting established in farming (8.2), planning a farm business (9.8), analysis of a farm business--operating a farm business (11.6), farm law (10.6), farm organizations (4.8), government programs and aids (4.3), agricultural journalism (2.5), social security (1.4), financing (4.8), and insurance (2.9).

Pumper asked only those instructors who taught the subject matter areas to rate the level of contribution for each subject matter area toward attaining the national objectives of vocational agriculture. A scale of 0 to 3 was developed with 0 as no contribution; 1, minor contribution; 2, moderate contribution; and 3, major or primary contribution. He observed that the following units received the higher ratings in meeting the contribution toward the first national objective (production agriculture competency): farm business management (2.4), animal science (2.7), soil science (2.7), plant science (2.6), agricultural mechanics (2.4), and off-farm agricultural mechanics (2.2). Farm business management rated 1.7 in meeting the second national objective (agricultural related occupation competency), whereas the other previously named areas rated from 1.7 to 2.1. Farm business management was rated 1.3 on the basis of meeting the third national objective (career opportunities in

agriculture) of 1.3. The five other identified areas ranged from 1.3 to 1.7, whereas careers ranked highest with a score of 2.4 in meeting the third national objective.

Careers; placement, advancement and continuing education; and human relations were rated 1.4, 1.3, and 1.2, respectively, in meeting the fourth national objective (placement, advancement, continuing education). Human relations (2.2) and leadership (2.0) rated highest in terms of meeting the fifth national objective (human relations). Leadership with a score of 2.6 was rated highest in meeting the sixth national objective (leadership--occupational, social, civic).

The author suggested a need for up-dating local offerings to meet current needs and to revise state curricula with emphasis as follows: (1) production agriculture units for major enterprises, (2) agriculturally related occupations, (3) career development, (4) youth development, (5) pre-job and job entry skills, and (6) preparation for college and other post-high school preparation.

Stevens (31), a member of an ad hoc committee for revising areas of instruction in secondary vocational agriculture programs in 1966, observed that the instructional areas in agriculture had been classified according to individual student occupation objectives.

The author stated that:

> today's broadened concept of agriculture has encouraged high schools and area vocational-technical schools to act to establish programs in addition to preparation for commercial farming (31, p. 104).

As a result of state wide survey's in agricultural related occupations, it was observed that there were three areas where persons with knowledge

and skills in agriculture were needed. The areas included: (1) agricultural supplies, (2) agricultural products, and (3) ornamental horticulture.

To meet the present and future needs in agriculture and agricultural related areas, the ad hoc committee suggested the following areas of instruction in the secondary vocational agriculture programs: (1) agricultural production, (2) agricultural supplies, (3) agricultural mechanics--sales and service, (4) agricultural products--processing and marketing, (5) ornamental horticulture, (6) forestry, (7) agricultural resources, and (8) other agriculture.

Farm business management is one unit of instruction included with the area of agricultural production. The ad hoc committee suggested that the knowledge and skills provided in this unit involve the basic fundamentals related to the economics of farm business management, namely: land, labor, capital, and management.

The deterrents and incentives to cooperation between vocational agriculture instructors and county extension agents were studied by Smith (29). Data were analyzed from questionnaires gathered from 60 randomly selected vocational agriculture instructors and 30 identified county extension agents from 30 randomly selected counties in Oklahoma. Areas included in the questionnaire were: (1) personal factors, (2) cooperation in planning and conducting educational programs, and (3) evaluation factors.

The author observed that the county extension agents were older and had more graduate education, experience, and tenure than those vocational

agriculture instructors observed. The author further observed that age and tenure did not affect the vocational agriculture instructors' and county extension agents' attitudes toward cooperation, whereas interest in cooperation was more positive among those vocational agriculture instructors and county extension agents who had: (1) more education, (2) came from a large county, or (3) had less experience. Furthermore, both groups regarded conducting meetings as the best framework for cooperation. The responsibility for sharing publicity, and the willingness to serve the urban people, were observed to be slightly more favorably accepted by the vocational agriculture instructors than by the county extension agents.

Smith concluded that instructors and agents should: (1) cooperate on youth programs, (2) set an example of cooperation in larger counties, (3) serve on each other's advisory councils, and (4) cooperate in meeting the technological needs of adults.

Harter (10) conducted a study to determine if county extension agents could be trained to interview and collect sufficiently accurate data from heterogeneous groups of farmers with varied organizational problems, to meet the needs in developing individual linear management programs acceptable to farm operators. Training in data collection procedures was provided to area extension agents who were specialists in farm management. The clientele to be selected and interviewed by the newly trained area farm management extension agents were those farmers who would cooperate and were: (1) assumed to have complete farm records, and (2) planning changes in their farming operations.

After a few farms had been programed and the results were analyzed, the researcher observed that the area farm management extension agents presented the selected farmers with two comparisons from which a decision must be reached. The two identified comparisons were: (1) current farm organization (income over variable expenses), and (2) a modified matrix which included one or more activities concerning special or organizational questions previously asked by the selected farmers.

The author concluded that when area farm management extension agents were trained in the understanding of how to effectively instruct linear programming and in the technique of how to conduct interviews, the acceptance of linear programming by farmers was affirmative.

A study was conducted by Gil-Turnes (8) to identify certain characteristics related to the one- and two-year vocational and technical programs in agriculture. He collected data by questionnaire from 305 post-high school institutions conducting agricultural programs in 1968-69.

His study revealed that: (1) enrollment in vocational and technical agricultural programs accounted for less than ten percent of the total enrollment, (2) students who enroll in vocational and technical agricultural programs do so immediately after graduating from high school, (3) over 60 percent of the institutions surveyed reported students enrolled in agricultural curriculum were engaged in agriculture or agriculture related occupations before enrolling, (4) nearly 77 percent of the institutions use advisory committees when developing a new agricultural curriculum, and (5) a percentage breakdown by areas of instruction in vocational and technical agricultural programs was as follows:

agricultural production, 26.0 percent; agricultural supplies, 24.3 percent; ornamental horticulture, 19.6 percent; agricultural machinery, 24.3 percent; forestry, 6.9 percent; agricultural resources, 4.8 percent; agricultural products, 3.0 percent; and other areas not classified, 1.5 percent.

Gil-Turnes observed that one-year agriculture curriculums were available among the offerings of many post-secondary institutions and were strongly orientated towards applied courses. He further observed that the one-year program meets the needs of those students who do not desire or are not able to complete a two-year program. He concluded that "as long as the one-year program and its more limited scope does not compete with the two-year technical program, it has a legitimate place in meeting the needs of a fraction of the student body" (8, p. 226).

Rapid change in agriculture requires that today's agriculturalist be a well educated and articulate technician according to McCollum (18), head of the Treasurer Valley Community College, Ontario, Oregon agricultural staff. He further suggested that community colleges may contribute their greatest influence on the future of our society and nation by providing specialized agricultural technician training for both those persons entering the agribusiness field and those who desire to up-date the knowledge and skills needed in their present areas of agribusiness employment.

The author observed:

> that many former agriculturalists were able to function satisfactorily with only a high school education and were able to learn the specialized skills as they worked; whereas, in today's agriculture such a broad base of technical knowledge and skill is being required as to severely limit people with only a high school education (18, p. 116).

McCollum concludes that technical training in agriculture at the community college level can provide the technical knowledge and skills necessary to meet this challenge.

Competencies in Agribusiness

An investigation of competencies in farm credit needed by farmers was made by Anderson (1) in 1966. A list of 17 abilities and 26 understandings, identified by a panel of 16 farm credit specialists, was submitted to 305 selected farmers. The selected farmers identified a list of 8 understandings and 11 abilities in which much competence was needed.

The eight understandings identified were: (1) importance of a good credit rating, (2) net farm income, (3) your repayment capacity, (4) importance of adequate operating reserves, (5) capital and its relationship to other farming resources, (6) your own attitude towards "being in debt", (7) risk and uncertainty of using credit, and (8) methods of charging interest.

The 11 abilities identified by the selected farmers were: (1) keep complete and accurate farm records, (2) analyze and interpret farm records and results, (3) distinguish between actual needs and mere desires, (4) compute management returns, (5) gain confidence of lenders, (6) determine own credit strengths and weaknesses, (7) compute true interest rate, (8) prepare and interpret a net worth statement, (9) plan repayment schedules to fit expected income, (10) effectively communicate with credit representatives, and (11) evaluate available credit sources.

The investigator recommended that the identified 43 competencies form the basis for farm credit instructional programs for youth enrolled in vocational agriculture classes, for adults enrolled in young and adult farmer classes, for clientele served by the county cooperative extension service, and for expanded curriculum offerings of post-secondary area schools.

Competencies in farm labor utilization needed by farmers were studied by Beaver (2). He surveyed 399 randomly selected farmers and 250 identified farmers from the five agricultural economic areas of Iowa to evaluate 49 competencies which had been selected by a panel of consultants. The list of competencies included 14 understandings and 35 abilities.

He found that both random sample and selected farmers suggested two understandings in which they needed much competence. They were an understanding of: (1) the importance of timeliness of operations in crop and livestock production and (2) when farm operator time is more profitably utilized in management activities than as labor. Two additional understandings with high degree of competence needed scores were the understandings of (1) costs and returns from using additional labor in each farm enterprise, and (2) the size or volume of farm business necessary to employ full-time year around labor.

Beaver noted that the one ability with much competence needed by both random sample and selected farmers was the ability to recognize conditions and circumstances requiring immediate attention and labor. Three additional abilities with high degree of competence needed scores

were the abilities to: (1) anticipate and prepare for peak work loads in the farm schedule, (2) arrange buildings, facilities and field layout to save labor and increase profits, and (3) use tillage and cropping practices, and equipment which save labor and increase profits.

The investigator indicated that there were at least 49 competencies considered necessary for efficient utilization of farm labor. The competencies should:

> serve as the basis for farm labor management instruction in agricultural education programs for vocational agriculture high school students, young and adult farmers, and in curricula in farm production and management in the area vocational schools and in the College of Agriculture (2, p. 111).

Christy (6) studied the competencies needed and possessed by farmers in the area of farm business analysis. The list of 40 competencies was developed by a panel of 16 farm business analysis consultants. A random sample of 333 farmers rated each competency on importance and extent it was possessed.

He found that the eight abilities ranking highest in terms of degree of competence needed were: (1) file accurate annual income tax returns, (2) figure cost of borrowing money, (3) take time for bookkeeping and analyzing your business, (4) recognize the probability of profit from various feeding and cropping programs, (5) measure financial progress, (6) recognize differences between highest yield and most efficient yield, (7) recognize effect of government legislation on your business, and (8) recognize source of income (family, crops, off-farm, etc.). Christy found that the competency ranked highest in degree of competence possessed was the farmers' ability to file accurate annual income tax returns.

The investigator indicated that farm experience and vocational agriculture provided by secondary schools can provide background for many of the 40 competencies needed in farm business analysis; however, there may be a need for specialized courses provided by vocational agriculture instructors, county cooperative extension personnel, and post-secondary area school instructors.

Farm management is an important unit of the total vocational agriculture curriculum in Iowa. Kruskop (16) assisted by a committee of selected vocational agriculture instructors and Iowa State University specialists developed a list of 30 competencies needed by vocational agriculture instructors for success in teaching farm management. A total of 156 vocational agriculture instructors with one or more years of teaching experience were classified into one of four groups--based upon quartile rank on teaching competence. Each identified group evaluated each competency on a 0 to 9 rating scale; however, only those identified in Group A (above the third quartile) and Group D (those below the second quartile) were observed.

Kruskop observed that the vocational agriculture instructors in Group A identified eight competencies as needed in providing farm management instruction with a mean score of 7.0 or more, whereas Group D identified ten competencies with a mean score of 7.0 or more. Eight of the ten competencies identified by Group D as needed were the eight identified as needed by Group A. Those eight include: (1) farm record keeping and farm business analysis, (2) analyze and interpret records, (3) wise use of farm credit and financial planning, (4) keep accurate and relevant

records, (5) economics of utilization of labor, machinery and power on the farm, (6) partial and complete farm budgeting, (7) economics of marketing farm products and (8) principles of selecting the livestock program. The two additional competencies identified as needed by Group D were: (1) principles of economics selection of the cropping system for a farm, and (2) work out budgets for an enterprise on a farm.

The author observed that all 30 farm management competencies evaluated were needed in some degree by all instructors of vocational agriculture. The findings by Kruskop suggest a need for additional undergraduate training for prospective teachers of farm management. The study further suggests the need for increased and expanded in-service instructional programs in farm management for instructors of vocational agriculture.

Coordination of Programs

A study was made by Tindall (32) to determine the relationship of class size and department enrollment to effectiveness of selected instructional media in vocational agriculture. He studied 168 classes of vocational agriculture in 42 randomly selected secondary public schools in Iowa. Each of the 168 vocational agriculture classes was divided into two enrollment sizes, 5 to 14, and 15 to 25 students per class. The 42 departments were grouped into two divisions with enrollments of 36 to 53 and 54 to 79 students.

Tindall measured the students' gain in achievement by administering a pre-test in farm credit, one of four selected subject matter areas,

prior to the beginning of the 14-day instructional period, and a post-test upon completion of the instructional unit. Instructor characteristics observed were teacher tenure, experience and education.

Highest achievement in the farm credit subject matter unit was attained by students in the large departments when audio-tutorial, demonstrations, and single concept film media were used; whereas, students in the small departments had the highest achievement when field trip, prepared lesson plans, transparency, and video-tape were used. Tindall concluded that "students in the large departments had higher achievement in the farm credit subject matter area than did those from small departments" (32, p. 58). He further observed "that students in large classes had higher achievement in the farm credit subject matter area than did those students in small classes" (32, p. 62).

The author suggested a slight relationship may exist between students' gain in achievement and class size. He further suggested that gain in achievement may decrease as department enrollment increases due to the larger class size. Student gain in achievement tended to decrease as tenure and experience of instructor increased. On the other hand, the correlations indicated that instructor education and student gain were very highly correlated.

An experimental evaluation to determine the effectiveness of demonstrations in instruction of vocational agriculture was conducted by Borcher (4) in 1970. The subjects used in the study were students enrolled in vocational agriculture in 12 randomly selected secondary schools. Six of the selected schools were assigned demonstrations as a

means of classroom instruction, whereas the remaining six were assigned to provide instruction without demonstrations. A pre-test and a post-test were administered to measure student and instructor achievement in each of the four subject matter areas of which one was farm credit.

Teacher attitude and years of teacher tenure were negatively correlated with the farm credit mean post-test scores. By adjusting the post-test mean scores with respect to teacher attitude and tenure, the demonstration group was favored. The analysis of covariance revealed an F-value of 4.79 which approached significance at the .05 level of significance; however, had the .10 level of significance been accepted, those students taught farm credit in the demonstration group would have had an appreciably greater achievement than those students whose instruction had not included demonstration.

Bendixen (3) observed the effect of teacher attitude scores and teacher pre-test scores when using transparencies in the instruction of farm credit to students enrolled in selected Vocational Agriculture IV classes in Iowa. Six schools randomly selected to use transparencies as a technique of instruction were compared with another group of six randomly selected schools in which transparencies were not used as a technique of instruction. Even though Bendixen could not reject the null hypothesis,

> Ho_{17} There was no difference between the treatment and control groups of schools in students' academic achievement in farm credit subject matter due to the use of prepared overhead projected transparencies when using teacher attitude scores and teacher pre-test scores as covariates. (3, p. 61).

Bendixen did note the covariates--teacher attitude scores and teacher

pre-test scores--approached the 5 percent level of significance. Furthermore, when an analysis of covariance on students' academic achievement on farm credit subject matter comparing schools using prepared transparencies with control schools using the same covariates, parallel results were obtained.

The effectiveness of using audio-tutorial techniques in teaching four subject matter units in vocational agriculture was studied by McVey (19). The author developed for presentation during a 14-day teaching period, four audio-tutorial presentations for each subject matter unit. Along with specific information about the students, their home farms, their parents' backgrounds, their schools, and their instructors, he studied these independent variables in relation to mean scores for attainment in the subject matter units which included farm credit.

McVey, upon applying stepwise regression analysis to class means for each of the independent variables, observed that teacher experience was step 2 of the 41 variables that accounted for variation in the data. When the author adjusted the specific objectives, post-test scores with respect to the three variables, which included teacher experience that accounted for 96 percent of the variation, the researcher observed that the students in schools in which audio-tutorial methods of instruction were used in teaching farm credit had higher scores than did those students in schools which were not provided audio-tutorial instruction.

In a study by Hansen (9) to investigate the effectiveness of using video-tape in teaching four subject matter units in high school vocational agriculture, of which one was farm credit, the author gathered

data on: (1) the student's aptitude, interests, and experiences; (2) home farm and family characteristics; (3) school characteristics; and (4) instructor characteristics.

Hansen observed there were no measurable differences between those students using video-tape and those students who did not have access to video-tape when he analyzed the farm credit pre-test, post-test and gain scores (difference between pre-test and post-test scores).

However, the author did observe a significant difference, beyond the one percent level, when an analysis of variance was used, using the two-factor experiment technique with repeated measures, to determine if the gain in knowledge in farm credit during the experiment by both groups was significant. Hansen indicated that 26 factors were selected by the step-wise regression technique, which accounted for differences measured between his treatment and control groups. Of these factors, intelligence quotient was identified as a covariate four times, department size was selected three times, and teacher experiences and teacher tenure were selected twice, whereas teacher knowledge and teacher attitude were selected only once.

The data led the author to conclude "that video-tape, when used as a supplement to instruction in vocational agriculture, is an effective technique of teaching" (9, p. 82).

Manpower Needs in Farm Management

Nielsen (24) initiated an investigation in the north central cash grain and the eastern livestock areas of Iowa to determine the relationship of high school vocational agriculture and size of home farm to

the establishment of graduates in farming. Included in his study were 20 randomly selected pairs of high schools with 120 male graduates stratified as follows:

1. Sixty vocational agriculture graduates and 60 nonvocational agriculture graduates.
2. sixty who were sons of landowners and 60 who were sons of nonlandowners,
3. sixty who were graduated during the 1943-1948 period and 60 who were graduated during the 1949-1954 period,
4. forty who came from home farms of 160 acres or less in size, 40 from home farms of 161 through 319 acres in size, and 40 from home farms of 320 acres or more. (24, p. 32, 34).

Twenty-four production and management practices used on farms operated by the graduates (1943-1955) were observed by Nielsen. He found that the vocational agriculture graduates were using the 24 practices to a greater extent than were the other graduates. Furthermore, he observed that the following variables contributed to this difference: (1) vocational agriculture training, (2) acres in home farm when graduated, and (3) ownership status of parents at time of graduation.

His study revealed that in 1955 vocational agriculture graduates had a higher mean index of farm records kept than did the nonvocational agriculture graduates. In addition, the mean index of records kept was slightly higher for the graduates from medium size home farms than for those from either smaller or larger home farms.

Nielsen concluded that those farm operators who had completed three or more years of vocational agriculture in secondary schools had higher crop, livestock and total gross products from their farms, and had used more extensively improved production and management practices on their

farms than secondary school graduates who had not received vocational agriculture training.

A study of the factors which had influenced Earlham (Iowa) Community High School graduates in selecting their present occupation was conducted by Lamers (17). Included as subjects were all farm-reared, male graduates from 1945 through 1965. A survey questionnaire was developed and mailed to all of the graduates who were living outside the town of Earlham, but within the Earlham school district at time of graduation. Of the 179 potential farm-reared graduates, 163 (91.1 percent) completed the questionnaires.

Lamers observed that 17.2 percent of the graduates were engaged in farming, 31.3 percent in off-farm agricultural occupations, and 49.7 percent in nonagricultural occupations.

The researcher found that 35 percent of the graduates were in the Earlham community at the time of the study. It was further observed that 58.9 percent of the graduates resided within a 30 mile radius of Earlham, 16.6 percent had migrated outside the 30 mile radius, but remained in Iowa, whereas 24.5 percent had left the state.

Lamers pointed out that opportunities in farming and agribusiness in the Earlham community were limited; therefore, suggesting this may have accounted for the high percentage (49.7) of the farm reared male graduates employed in nonagricultural occupations. Other reasons for small numbers in farming and agribusiness occupations may have been the continuation of education at the post-secondary level, military service, lack of capital, and fewer farming or agribusiness opportunities

due to an annual decline in number of farm operators.

Trees (33), in a study to determine opportunities for establishment of young farmers in farming, analyzed questionnaires returned by 172 farm operators in the Ventura (Iowa) Community High School district.

The data revealed that for the past ten years, an average of 1.1 young men (less than 31 years of age) had entered into farming each year, whereas 1.7 men (between 32 and 40 years of age) had entered into farming each year. He observed only 11 farm operators were under 31 years of age; however, there were 35 farm operators who were between the ages of 32 to 40 years.

As an outgrowth of his study, the author estimated 4.3 farm operators would be needed each year for the next 10 years as replacement farm operators in the Ventura community district. Trees assumed there would be a shortage of 1.0 operator per year for the next 10 years provided 40 percent of the graduates in vocational agriculture, and 40 percent of the graduates whose fathers were employed in off-farm agriculture were to farm.

A study by Crawford (7) to determine factors affecting the establishment of young farm operators in Iowa, involved a random sample of farm operators stratified by economic area between the ages of 18 and 30 years, inclusive as of December 31, 1968. An analysis of data by the author revealed an estimated 13,630 young farm operators in Iowa. Nearly 27 percent of the young farmers were located in the western livestock area, 24.1 percent in the cash grain area, 17.8 percent in the eastern livestock area, 16.6 percent in the northeastern dairy area,

whereas only 14.6 percent were located in the southern pasture area.

Crawford observed the mean age of all respondents was 26.2 years of age. He found that 73.0 percent of the young farm operators were high school graduates. Thirty-two percent of the young farm operators had some post-high school education; however, only 3 percent were college graduates.

Fifty-three and seven-tenths percent of the young farm operators, who were first year farmers, provided up to 25 percent of the needed finances, 33.5 percent provided from 26 through 50 percent, 16.8 percent provided from 51 through 75 percent, and 32.9 percent provided from 76 through 100 percent of the needed first year finances. For those young farm operators who provided up to 50 percent of the first year's finances, their second source of financial assistance was their father; the lending agency was their third source, whereas those first year young farm operators who provided 51 through 100 percent of their finances used, as their second source of financial assistance, the lending agency, and their father became the third source.

Each respondent was asked to rate certain areas in agriculture where additional instruction for young farm operators is needed. Those agricultural areas and the respective percentages that the respondents checked much or more instruction was needed were as follows: farm record analysis (50.4 percent), money management (45.4 percent), legal transactions (35.5 percent), and agricultural marketing (34.8 percent), livestock production (55.9 percent), and crop production (54.0 percent).

Crawford's findings revealed that current participation of these

young farm operators in organized educational programs was minimal; therefore, a definite need existed for new or expanded educational programs for young farm operators. Three of the recommendations made by the author were as follows: "(1) each high school vocational agriculture department in Iowa should have a young farmer program, (2) each county extension director should develop a farm and home business management program, and (3) area vocational technical schools need to develop programs for young farm operators" (7, p. 176).

In 1967, Kahler (15) studied factors related to the occupations of Nebraska farm male high school graduates. Data were collected on 1,120 farm reared graduates from 69 Nebraska high schools who had offered an approved program of vocational agriculture from 1954 through and including 1958.

Kahler found that 37.7 percent of the graduates were engaged in farming as farmers or as farm managers, 1.0 percent were employed as farm laborers, 14.9 percent were employed in off-farm agricultural occupations, whereas 46.4 percent were employed in occupations not related to agriculture.

When he compared the migration of graduates, classified according to agricultural classification, he found that 54.0 percent had remained in the same county in which they had lived at the time they were graduated from high school, 7.7 percent had migrated to a contiguous county, whereas 6.0 percent had migrated to a different county, but had remained in the same Nebraska economic area. Remaining in Nebraska, but having migrated from the economic area in which they lived on the day of their

graduation were 12.8 percent; 6.3 percent had migrated to a contiguous state.

He further stated that 22.8 percent of those classified as farmers and ranchers had incomes over $12,001, whereas 8.8 percent of those engaged in off-farm agricultural occupations, and 5.7 percent of those engaged in nonagricultural occupations had incomes in excess of $12,001. His study revealed that graduates whose occupations were classified as farmers and farm managers were receiving higher incomes than those in other occupations.

It was revealed that 38.4 percent had indicated that knowledge of agriculture was very much needed in their occupation, but 23.4 percent felt that knowledge of agriculture had not been needed. He further observed that 43.4 percent of those graduates engaged in off-farm agricultural occupations felt agricultural knowledge was very much needed in their occupations. Even 26.3 percent of those in nonagricultural occupations expressed at least some need for such knowledge in their occupations.

This review of literature relating to content and emphasis placed upon instruction in identified units in the economics of farm business management provided by public supported institutions and personnel revealed only one study closely related to the author's topic. Furthermore that study was restricted to vocational agriculture, one of the three identified public supported institutions providing agricultural education. The author has cited several pieces of literature which relate studies associated with instruction in the economics of farm business management provided by public supported institutions and personnel.

METHOD OF PROCEDURE

The principal objective of this study was to measure the congruences of the content and emphasis placed upon instruction in identified units in the economics of farm business management to factors associated with selected physical and personal characteristics of Iowa's public supported institutions and personnel in the various economic areas during the period of July 1, 1970 through June 30, 1971.

The study involved a sample of 75 vocational agriculture departments, a sample of 75 counties, and all post-secondary area schools that provided farm business management programs in Iowa.

This study was intended to be an in-depth analysis of a larger study entitled, "Educational Programs to Meet the Manpower Needs of Iowa Agriculture", in which six subject matter areas are being compared according to amounts of instructional time allocated, program objectives, functions, and achievements among the public supported institutions. The subject matter areas included: (1) animal science, (2) agronomic science, (3) agricultural mechanics, (4) economics of farm business management, (5) off-farm agribusiness management, and (6) personal and leadership development.

The units selected for study in economics of farm business management include: (1) agricultural organizations and agencies, (2) agricultural programs and policies, (3) farm appraisal, (4) farm credit, (5) farm risk protection, (6) farm law, (7) farm leases, (8) farm safety, (9) marketing, (10) labor management, (11) farm buildings, (12) farmstead

planning, (13) machinery management, (14) planning cropping systems, (15) planning livestock systems, (16) planning the farm business, (17) records and record analysis, and (18) other major areas not listed.

Design of the Study

Selection of vocational agriculture departments

A list of schools offering vocational agriculture during the time period, July 1, 1970 through June 30, 1971 was obtained from the Department of Agricultural Education files at Iowa State University. Day school enrollment for the same time period as well as young and adult enrollment for the year, July 1, 1969 through June 30, 1970 were obtained from the Agricultural Education Section of the Elementary-Secondary Career Education Services of the State of Iowa Department of Public Instruction. Each vocational agriculture department was ranked on the basis of an adjusted total enrollment with the highest enrollment at the top and the lowest at the bottom. The adjusted total enrollment was figured as follows:

$$ATE = DSE + \left(\frac{YFE + AFE}{5}\right)$$

where:

ATE = adjusted total enrollment

DSE = day school enrollment

YFE = young farmer enrollment

AFE = adult farmer enrollment

The State of Iowa was divided into five economic areas, illustrated by Magill and Murray (20), Iowa State University Agricultural Economists,

as (1) western livestock, (2) cash grain, (3) northeast dairy, (4) eastern livestock, and (5) southern pasture. These economic areas were used to stratify the vocational agricultural departments. These strata were further subdivided into three sections by a systematized approach to provide more equal representation of all public secondary vocational agriculture programs within each strata.

From the list of the ranked vocational agriculture departments, ten were randomly selected to each of the subdivided strata. Vocational agriculture departments numbered from 1 through 5 in each subdivided strata were selected as participants in the study, whereas those departments numbered from 6 through 10 in each subdivided strata were selected as alternate participants. The geographic locations of the 75 vocational agriculture departments included in the study are presented in Figure 1.

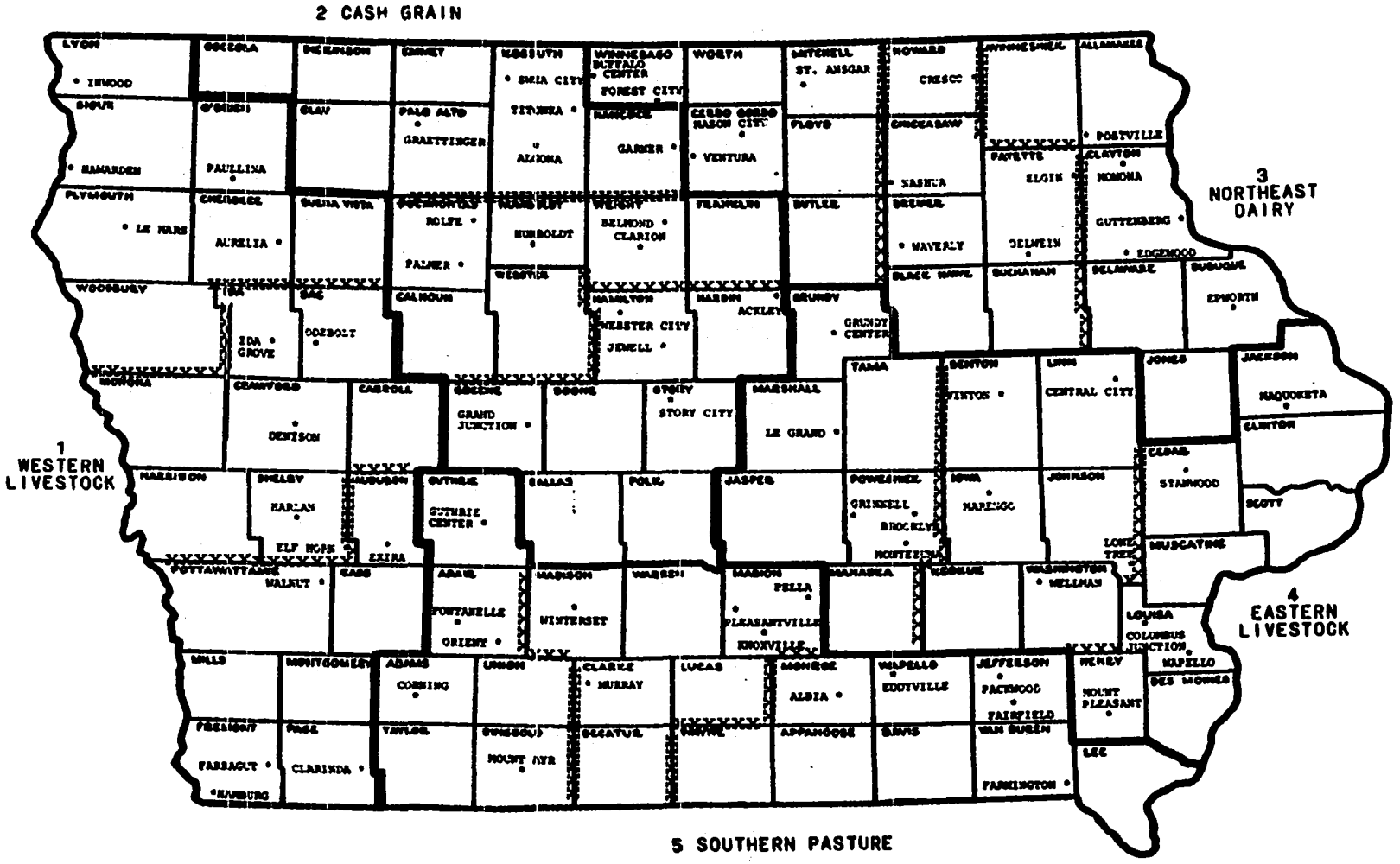
Selection of counties

The economic areas described previously were used to stratify the counties in the state. These strata were further subdivided into three sections by a systematized approach to provide more equal representation of all county cooperative extension programs within each strata.

From the list of numbered counties within each subdivided strata, five were randomly selected for inclusion in the study. The geographic location of the 75 counties selected are shown in Figure 2.

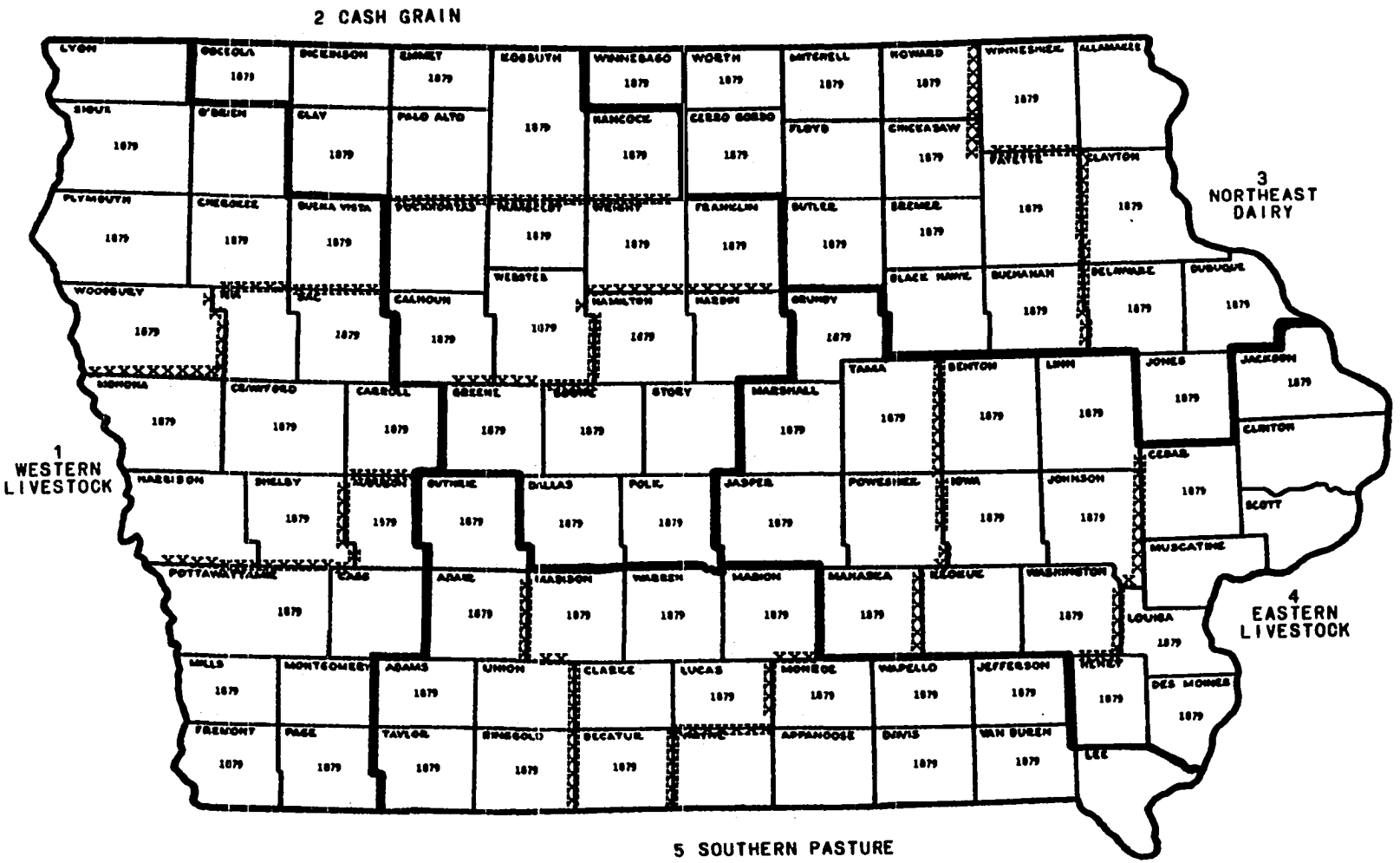
Selection of post-secondary area schools

A directory of post-secondary agricultural education programs and personnel in Iowa for 1970-71 was obtained from the Post-Secondary



——— Indicates boundaries of economic areas.
x x x Indicates subdivision boundaries within each economic area.

Figure 1. Geographic location of participating vocational agriculture departments.



Indicates boundaries of economic areas.
x x x Indicates subdivision boundaries within each economic area.

Figure 2. Geographic location of participating county cooperative extension services (1879 = participating counties).

Section of the Career Education Division of the State of Iowa Department of Public Instruction. The geographic location of the post-secondary area schools providing farm management programs are shown in Figure 3.

Collection of Data

Vocational agriculture programs

Following the selection of vocational agriculture departments, each vocational agriculture instructor was mailed a letter (Appendix A) emphasizing the purpose of the study and encouraging the vocational agriculture instructor's cooperation. A postcard was included asking the instructor to indicate his desire or lack of desire to be a participant.

The project staff developed a questionnaire (Appendix B), designed to collect selected personal characteristics of the instructor and selected physical characteristics of the department. This questionnaire was mailed to each of the instructors and records were maintained of their responses. Fourteen days after the original mailing, the nonrespondents received a follow-up letter and/or telephone call encouraging the return of the questionnaire.

A subject matter survey form (Appendix C) was developed by this researcher to collect the number of periods and/or hours of instruction provided in teaching identified units in the economics of farm business management. The respondents assembled at one of six pre-selected locations and were administered this survey form.

Those respondents who were unable to attend the group data collection meeting were mailed the subject matter questionnaire and

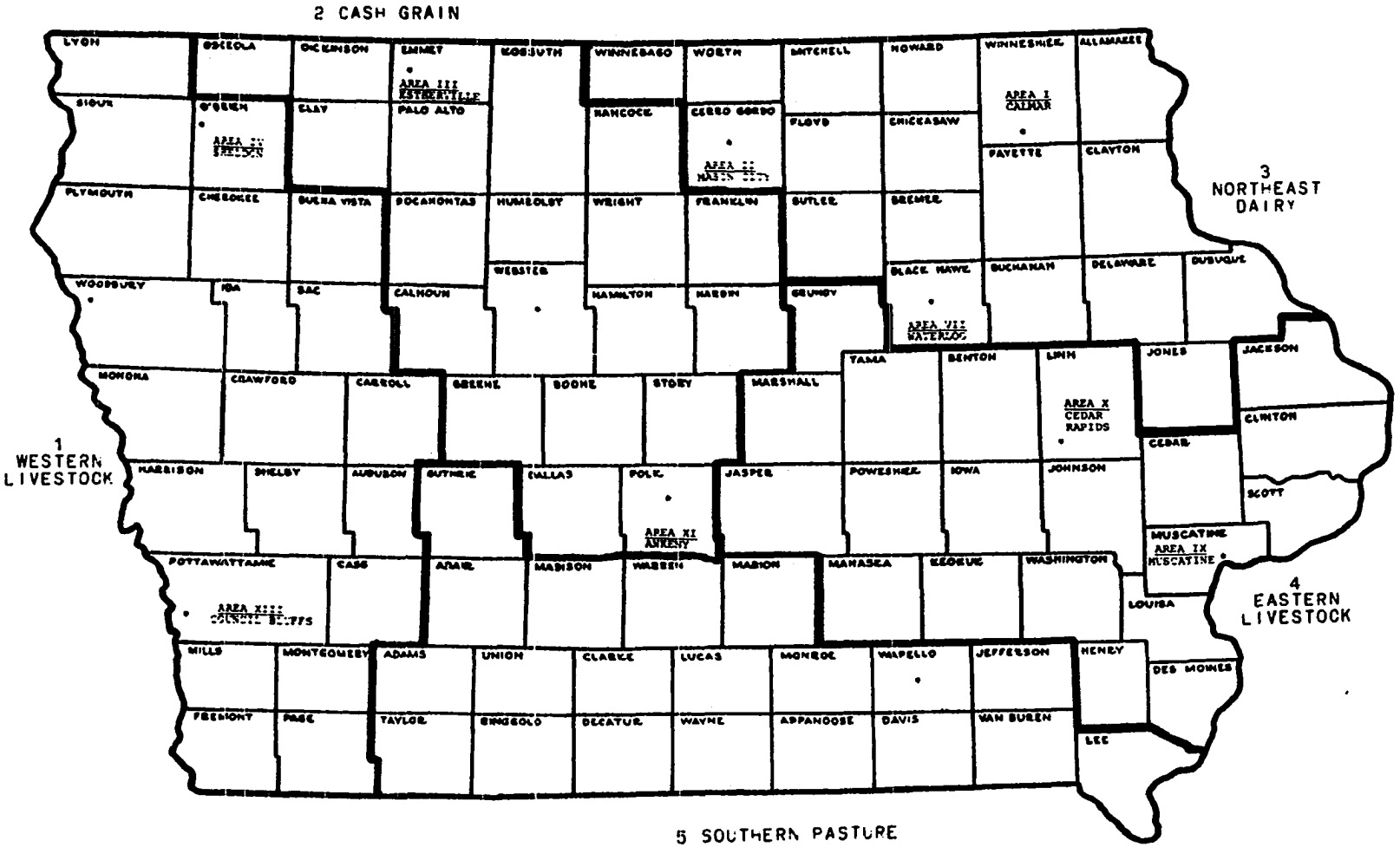


Figure 3. Geographic location of participating post-secondary area schools.

records were maintained of their responses. Fourteen days after the original mailing, the nonrespondents received a follow-up letter and/or telephone call encouraging the return of the questionnaire.

Counties

Following the selection of the counties, a directory of county and multi-county extension personnel was obtained from the office of the Iowa Cooperative Extension Service at Iowa State University. The project staff developed a questionnaire, designed to collect selected personal characteristics of the county cooperative extension director. Each of the county cooperative extension directors was mailed a packet which included:

1. a letter emphasizing the purpose of the study and encouraging the county cooperative extension directors' cooperation in recording the requested data (Appendix A),
2. the selected personal characteristic questionnaire (Appendix B), and
3. postage-paid return addressed envelope.

A record was maintained of their responses. A follow-up letter was sent to each nonrespondent 14 days after the original mailing encouraging the return of the questionnaire.

A subject matter survey form (Appendix C) was developed by this researcher to record man hours expended and total contacts with youth and adults from the State Extension Management Information System (SEMIS) print outs as reported by county cooperative extension directors to the office of the Iowa Cooperative Extension Service at Iowa State

University. To assist in determining which unit to code the data from the SEMIS print outs on the subject matter survey form, the state purposes plan of work objectives and extension subject code definitions were used. Since the manhours expended values as printed in SEMIS include planning as well as instruction time, a sample of five county cooperative extension directors was made to determine the percentage of time for allocation to subject matter instruction. The selected county cooperative extension directors indicated 30 percent of the manhours expended were actual instruction hours; therefore, the manhour expended values reported by SEMIS were reduced to 30 percent and recorded on the subject matter survey form.

Post-secondary area schools

After obtaining the directory of post-secondary agricultural education programs, the department head was mailed a letter (Appendix A) emphasizing the purpose of the study. A telephone conversation seven days following the original letter confirmed the post-secondary agricultural education instructor's cooperation and identified the number of instructors in the subject matter area of farm business management.

The project staff developed questionnaires (Appendix B) designed to collect selected personal characteristics of the instructor and selected physical characteristics of the post-secondary area schools.

A subject matter survey form (Appendix C) was designed and developed by this researcher to collect the number of hours of instruction provided in each of the identified units of the economics of farm business management. These questionnaires were mailed to the department heads

for distribution to appropriate personnel. A follow-up visit was made by the project staff to assist with the completion of the survey form.

Analysis of Data

The data gathered from the three public supported institutions and their personnel were coded and key punched on data processing cards. The data on the print outs were checked and verified by the investigator against the raw data. Means were computed for each of the variables and this information was coded and placed on data processing cards for analysis. Since the secondary schools and the county cooperative extension service programs were randomly selected by economic area, totals, means, and analysis of variance were the tests used to analyze the hours of instruction in each unit of economics of farm business management. The total hours of instruction in each unit was calculated for each of the nine post-secondary area schools that provided instruction in economics of farm business management.

Analysis were conducted at the Iowa State University Computation Center. The statistical methods used in analyzing the data were in accordance with Snedecor and Cochran (30).

The single classification analysis of variance models used in this were as follows:

Economic area

$$Y_{ij} = \mu + a_i + e_{ij}$$

where:

Y_{ij} = the measurement of the j^{th} instructional program within the i^{th} economic area,

μ = overall grand mean,

a_i = effect of the i^{th} economic area,

e_{ij} = effect due to error,

i = 1, 2, ..., 5 (economic area),

j = 1, 2, ..., 15 (instructional program).

Instructor and director characteristics

$$Y_{ij} = \mu + a_i + e_{ij}$$

where:

Y_{ij} = the measurement of the j^{th} instructional program, within the i^{th} group interval characteristic,

μ = overall grand mean,

a_i = effect of the i^{th} group interval characteristic,

e_{ij} = effect due to error,

i = 1, 2, ..., a (group interval characteristic),

j = 1, 2, ..., n (instructional program).

Hypotheses

Each of the 40 hypotheses state that there were no differences in the amounts of instruction provided due to differences in the dependent variable. It was assumed that differences would exist; therefore, analysis of variance tests were made to determine if such differences were significant.

FINDINGS

The purpose of this study was to determine content and emphasis placed on identified units of instruction in the economics of farm business management by personnel in public supported institutions in the various economic areas of Iowa during the period of July 1, 1970 through June 30, 1971. Included in this study were a sample of 75 vocational agriculture departments, a sample of 75 counties, and all post-secondary area schools that provided farm business management programs in Iowa.

The findings of this study are subdivided into the following five major categories:

1. Vocational agriculture department programs,
2. Relationship of department and instructor variables to instruction provided in the economics of farm business management,
3. County cooperative extension service programs,
4. Relationship of county extension director variables to instruction provided in the economics of farm business management, and
5. Post secondary-area school programs.

The findings presented give evidence to support the acceptance or rejection of null hypotheses. The hypotheses were stated in accordance with the objectives of the study as presented in the Introduction.

The analyses of data conducted in this study used the mean hours

of instruction as the basic observation since the vocational agriculture and the county cooperative extension service programs were randomly selected by economic area. The treatment effects were then tested against variations among the mean hours of instruction. The statistical models used in analyzing the data can be found in the Methods of Procedure. Since the total population was used for the post-secondary area schools, the analyses of data conducted involves a description of hours of instruction.

Vocational Agriculture Department Programs

The mean hours of instruction in the identified units in economics of farm business management provided by the vocational agriculture departments by level and classification are presented in Table 1. It was observed that a mean of 60.3 hours of instruction in economics of farm business management was provided in Vo-Ag III, 50.9 hours in Vo-Ag IV, and 28.7 hours through small group, personal contact, and visitation methods, whereas 6.9 mean hours of instruction was provided in Vo-Ag I. Young and adult farmers received a mean of 32.6 hours of instruction in the economics of farm business management instruction through small group, personal contact, and visitation methods. No instruction in this subject was provided prior to the ninth grade.

The day school program involved 78.6 percent of the total hours of instruction provided in economics of farm business management. The young and adult program included 19.6 percent of the total, whereas FFA represented only 1.8 percent of the total hours of instruction.

Table 1. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments by level and classification of program, 1970-71

Instructional unit	Level and Day			
	Below 9th grade	Vo-Ag I or 9th	Vo-Ag II or 10th	Vo-Ag III or 11th
Agricultural organization and agencies	0.0	0.2	0.3	1.8
Agricultural programs and policies	0.0	0.3	0.1	2.0
Farm appraisal	0.0	0.1	0.1	2.8
Farm credit	0.0	0.3	0.3	4.9
Farm risk protection	0.0	0.0	0.1	2.2
Farm law	0.0	0.1	0.2	2.5
Farm leases	0.0	0.1	0.2	2.5
Farm safety	0.0	0.9	0.9	1.5
Marketing	0.0	0.5	0.5	5.2
Labor management	0.0	0.1	0.1	1.6
Farm buildings	0.0	0.4	0.2	2.0
Farmstead planning	0.0	0.1	0.2	2.6
Machinery management	0.0	0.1	0.2	5.1
Planning cropping system	0.0	0.5	1.2	4.2
Planning livestock system	0.0	0.8	0.4	4.6
Planning the farm business	0.0	0.2	0.5	4.5
Records and record analysis	0.0	2.2	2.5	10.3
Total	0.0	6.9	8.0	60.3

classification of programs					Sample mean
school			Young-adult		
Vo-Ag IV or 12th	Small group, personal, visitation	FFA	Classes	Small group, personal, visitation	
2.3	0.5	0.2	0.1	0.6	5.9
1.9	0.6	0.0	0.7	1.2	6.8
3.7	0.8	0.1	0.2	0.7	8.5
4.4	1.8	0.4	0.6	1.9	14.7
2.0	0.4	0.1	0.3	0.5	5.6
2.3	0.2	0.1	0.3	0.6	6.3
2.5	1.0	0.1	0.2	1.2	7.8
1.1	1.8	0.2	0.1	0.7	7.3
4.5	2.4	0.4	0.6	3.0	17.2
1.2	0.4	0.0	0.0	0.6	4.1
1.8	1.2	0.1	0.3	2.5	8.6
2.3	0.8	0.0	0.1	1.8	7.9
5.5	2.7	0.0	0.5	2.9	17.1
2.6	2.6	0.5	0.0	1.7	13.3
2.9	2.8	0.2	0.1	1.7	13.5
3.4	2.7	0.1	0.5	2.3	14.2
6.6	6.0	1.1	1.4	8.7	38.7
50.9	28.7	3.6	6.0	32.6	197.4

Data in Table 1 reveal that a mean of 38.7 hours of instruction in economics of farm business management was provided in records and record analysis, 17.2 hours in marketing, 17.1 hours in machinery management, 14.7 hours in farm credit, 14.2 hours in planning the farm business, 13.5 hours in planning the livestock system, and 13.3 hours of instruction in planning the cropping system. In contrast, 4.1 hours of the total instruction in economics of farm business management was provided in labor management.

Vocational agriculture instructors provided nearly 5.5 hours of instruction through small group, personal contact, and visitation methods for each hour of classroom instruction provided at the young and adult farmer level. On the other hand, vocational agriculture instructors provided nearly one hour of instruction through small group, personal contact, and visitation methods for each four hours of classroom instruction provided at the day school level.

Table 2 reveals the mean hours of instruction provided in each instructional unit in each economic area.

Ho_1: There were no differences in the amounts of instruction in economics of farm business management provided by vocational agriculture departments among the economic areas.

The economic area in which the most instruction was provided was the northeast dairy area with a mean of 244.5 hours. The second highest economic area in hours of instruction provided was the western livestock area with 218.8 hours. The economic area that ranked third and close to the sample mean hours of 197.4, was the cash grain area with a mean of 198.8 hours. The southern pasture area ranked fourth and provided 175.5

Table 2. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organization and agencies	6.3	4.2	8.7	4.7	5.8	5.9
Agricultural programs and policies	7.9	4.7	7.9	5.3	8.2	6.8
Farm appraisal	9.8	6.8	11.0	6.3	8.5	8.5
Farm credit	20.6	13.7	15.5	9.9	13.8	14.7
Farm risk protection	4.6	6.3	4.7	4.4	7.9	5.6
Farm law	7.7	6.7	5.1	4.6	7.2	6.3
Farm leases	9.3	9.9	8.2	5.0	6.6	7.8
Farm safety	12.4	4.1	6.9	6.5	6.5	7.3
Marketing	24.0	14.3	21.7	11.8	14.3	17.2
Labor management	3.6	3.5	5.8	3.4	4.3	4.1
Farm buildings	10.7	11.3	9.2	5.7	6.0	8.6
Farmstead planning	8.4	8.6	9.5	6.1	6.7	7.9
Machinery management	15.9	17.1	24.5	14.1	14.1	17.1
Planning cropping system	13.7	13.5	16.5	10.9	11.8	13.3
Planning livestock system	15.9	13.5	15.1	10.3	12.6	13.5
Planning the farm business	11.9	11.9	23.6	10.1	13.6	14.2
Records and record analysis	36.1	48.7	50.6	30.5	27.6	38.7
Total	218.8	198.8	244.5	149.6	175.5	197.4

hours of instruction. Providing the least instruction in farm business management were the departments in the eastern livestock area with a mean of 149.6 hours.

A single analysis classification of variance was calculated for the mean hours of instruction provided in each economic area. The F-value (1.5399) was not significant at the .05 level of significance and the null hypothesis was not rejected. There were no differences in the amounts of instruction in economics of farm business management provided by vocational agriculture departments among the economic areas.

Ho_2: There were no differences in the amounts of instruction provided in the various instructional units in economics of farm business management by vocational agriculture departments among the economic areas.

Table 2 further reveals that instruction in records and record analysis accorded the widest range in hours from a low of 27.6 hours in the southern pasture area to a high of 50.6 hours in the northeast dairy area. Ranges in mean hours of instruction in the various instructional units provided by vocational agriculture departments among the various economic areas included: (1) planning the farm business, eastern livestock area (10.1 hours) to northeast dairy area (26.3 hours); (2) marketing, eastern livestock area (11.8 hours) to western livestock area (24.0 hours); (3) farm credit, eastern livestock area (9.9 hours) to western livestock area (20.6 hours); and (4) machinery management, eastern livestock and southern pasture areas (14.1 hours) to northeast dairy area (24.5 hours).

A single classification analysis of variance test was calculated

for instruction provided in each of the 17 instructional units in each of the economic areas to determine if any differences existed. There were no differences observed; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction provided in the various instruction units in economics of farm business management by vocational agriculture departments among the economic areas.

Data in Table 3 identify the mean hours of instruction provided at each level and classification of the vocational agriculture program in each of the economic areas.

Ho_3: There were no differences in the amounts of instruction provided in economics of farm business management to secondary students classified by grade and young-adult farmers among the economic areas.

Instructors in the northeast dairy area provided the most instruction in economics of farm business management with a mean of 244.5 hours. Furthermore, those instructors also provided the most instruction in the total young-adult farmer program with a mean of 77.4 hours. Most instruction in the total day school program was provided to students in the western livestock area with 190.8 hours. Providing the most instruction in the vo-ag (vocational agriculture) classes were those instructors in the southern pasture area with 138.3 hours.

Data in Table 3 reveal that a mean of 6.9 hours of instruction was provided in economics of farm business management in Vo-Ag I with a range from 6.3 hours in the eastern livestock area to 7.7 hours in the northeast dairy area. There were 8.0 mean hours of instruction provided in Vo-Ag II with a range from 6.0 hours in the western

Table 3. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments by level and classification, by economic area, 1970-71

Level and classification	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Vo-Ag I or 9th	6.7	6.9	7.7	6.3	7.1	6.9
Vo-Ag II or 10th	6.0	8.0	7.7	8.1	10.3	8.0
Vo-Ag III or 11th	60.4	63.4	45.3	52.9	79.7	60.3
Vo-Ag IV or 12th	57.6	55.4	64.3	36.0	41.2	50.9
Small group, personal contact, and visitation methods (day)	54.0	20.5	36.2	14.2	18.4	28.7
FFA	6.0	3.7	6.0	1.8	1.0	3.6
Young-adult farmer classes	8.5	2.8	9.7	5.7	4.2	6.0
Small group, personal contact, and visitation methods (young-adult)	19.7	37.9	67.7	24.4	13.8	32.6
Total Vo-Ag I+II+III+IV	130.7	133.7	124.9	103.3	138.3	126.2
Total day program excluding FFA	184.7	154.3	161.1	117.7	156.6	154.9
Total day program including FFA	190.8	158.0	167.1	119.3	157.4	158.5
Total young-adult farmer program	28.0	40.8	77.4	30.2	18.1	38.9
Total program (day and young-adult)	218.8	198.8	244.5	149.5	175.5	197.4

livestock area to 10.3 hours in the southern pasture area. A mean of 60.3 hours of instruction in farm business management was provided for Vo-Ag III students, with a range from 45.3 hours in the northeast dairy area to 79.7 hours in the southern pasture area. The mean hours of instruction provided for Vo-Ag IV students was 50.9, ranging from 36.0 hours in the eastern livestock area to 64.3 hours in the northeast dairy area.

Small group, personal contact, and visitation methods were used in providing 28.7 hours of instruction for day level students with a range of 14.2 hours provided in the eastern livestock area to 50.4 hours in the western livestock area. A mean of 3.6 hours of instruction was provided through FFA with a range of 1.0 hours in the southern pasture area to 6.0 hours in the western livestock and northeast dairy areas.

A single classification analysis of variance was computed for each of these means and no significant F-values were observed. The null hypothesis was not rejected. There were no differences in the amounts of instruction provided in economics of farm business management to secondary students classified by grade and young-adult farmers among the economic areas.

Recorded in Table 4 are the mean hours of instruction provided in economics of farm business management for 9th, 10th, 11th, and 12th grade secondary school students classified by economic area.

Ho_4: There were no differences in the amounts of instruction in economics of farm business management instructional units provided in secondary programs for 9th, 10th, 11th, and 12th grade students among the economic areas.

Table 4. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 9th, 10th, 11th, and 12th grade students, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organization and agencies	5.3	4.1	5.9	2.9	4.8	4.6
Agricultural programs and policies	6.5	2.9	4.8	3.0	4.3	4.3
Farm appraisal	7.5	4.6	8.8	4.8	7.7	6.7
Farm credit	13.1	10.9	8.7	6.9	10.1	9.9
Farm risk protection	4.4	5.9	3.0	3.0	5.0	4.3
Farm law	6.0	6.0	4.0	3.9	5.7	5.1
Farm leases	6.3	6.7	5.1	3.3	5.2	5.3
Farm safety	5.7	3.0	4.1	4.6	4.9	4.4
Marketing	11.5	11.5	11.9	6.9	11.7	10.7
Labor management	2.3	3.1	3.2	2.9	3.8	3.1
Farm buildings	4.8	4.5	3.9	4.5	4.5	4.4
Farmstead planning	7.4	3.7	6.0	3.9	5.1	5.2
Machinery management	8.9	13.2	8.9	11.8	11.6	10.9
Planning cropping system	7.7	7.7	9.4	7.7	10.0	8.5
Planning livestock system	8.5	7.5	8.9	8.1	10.3	8.6
Planning the farm business	6.6	9.3	9.8	6.9	10.5	8.6
Records and record analysis	18.4	29.2	18.6	18.3	23.3	21.5
Total	130.7	133.7	124.9	103.3	138.3	126.2

The total hours of instruction provided for secondary students revealed a close relationship among four of the economic areas. The most instruction was provided in the southern pasture area with a mean of 138.3 hours. Following closely was the cash grain area with a mean of 133.7 hours, and the western livestock area with 130.7 hours. The mean hours of instruction provided in the northeast dairy area was 124.9 hours, whereas the area with the least amount of instruction provided for secondary students was the eastern livestock area with a mean of 103.3 hours.

Ranges in the mean hours of instruction provided in the various instructional units of farm business management among the economic areas were: (1) records and record analysis, eastern livestock area (18.3 hours) to the cash grain area (29.2 hours); (2) farm credit, eastern livestock area (6.9 hours) to the western livestock area (13.1 hours); (3) marketing, eastern livestock area (6.9 hours) to the northeast dairy area (11.9 hours); (4) machinery management, western livestock area (8.9 hours) to the cash grain area (13.2 hours); (5) planning the farm business, western livestock area (6.6 hours) to the southern pasture area (10.5 hours); (6) planning the livestock system, cash grain area (7.5 hours) to the southern pasture area (10.3 hours); and (7) planning the cropping system, western livestock, cash grain, and eastern livestock areas (7.7 hours) to southern pasture area (10.0 hours). The farm buildings instructional unit had the least amount of variation in hours of instruction provided. This unit had a range from a mean of 3.9 hours in the northeast dairy area to a mean of 4.8 hours in the western

livestock area.

A single classification analysis of variance was calculated for the means of each of the instructional units and for the mean total hours of instruction provided in economics of farm business management to determine if there were significant differences in hours of instruction provided among the economic areas. There were no significant F-values identified; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction in economics of farm business management instructional units provided in secondary programs for 9th, 10th, 11th, and 12th grade school students among the economic areas.

Table 5 presents the mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 9th grade students among the economic area.

H_{o5}: There were no differences in the amounts of instruction provided to 9th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

A mean of 6.9 hours of instruction was provided to 9th grade vocational agriculture students in farm business management. The range among economic areas was from 6.3 hours in the eastern livestock area to 7.7 hours in the northeast dairy area.

The instructional unit that received the most emphasis was records and record analysis with a mean of 2.2 hours and ranged from 1.8 hours in the eastern livestock area to 2.7 hours in the western livestock area. Nearly one hour of instructional time was provided relating to

Table 5. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 9th grade students, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western live-stock	Cash grain	North-east dairy	Eastern live-stock	Southern pasture	
Agricultural organizations and agencies	0.0	0.3	0.3	0.3	0.2	0.2
Agricultural programs and policies	0.0	0.0	0.8	0.1	0.5	0.3
Farm appraisal	0.0	0.0	0.2	0.1	0.0	0.1
Farm credit	0.6	0.1	0.4	0.3	0.2	0.3
Farm risk protection	0.0	0.0	0.0	0.0	0.0	0.0
Farm law	0.0	0.0	0.0	0.0	0.3	0.1
Farm leases	0.0	0.2	0.1	0.1	0.2	0.1
Farm safety	1.4	0.9	0.7	1.1	0.6	0.9
Marketing	0.7	0.0	0.7	0.5	0.8	0.5
Labor management	0.0	0.0	0.2	0.1	0.0	0.1
Farm buildings	0.0	0.4	0.5	0.7	0.6	0.4
Farmstead planning	0.0	0.3	0.1	0.2	0.0	0.1
Machinery management	0.0	0.0	0.3	0.0	0.1	0.1
Planning cropping systems	0.2	1.1	0.5	0.3	0.2	0.5
Planning livestock systems	0.7	1.0	0.5	0.9	0.8	0.8
Planning the farm business	0.5	0.3	0.2	0.0	0.1	0.2
Records and record analysis	2.7	2.1	2.1	1.8	2.5	2.2
Total	6.7	6.9	7.7	6.3	7.1	6.9

each farm safety, and planning the livestock systems.

The computed single classification analysis of variance test yielded no significant F-values; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction provided to 9th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

The mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 10th grade students among the economic areas are recorded in Table 6.

Ho_6: There were no differences in the amounts of instruction provided to 10th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

The mean hours of instruction provided to 10th grade students in farm business management was 8.0. The most instruction (10.3 hours) was provided to 10th grade students in the southern pasture area. In contrast, the least instruction (6.0 hours) was provided in the western livestock area. The unit that received the most hours of instruction was records and record analysis with 2.5 hours. The unit receiving the second most hours of instruction was planning the cropping systems with 1.2 hours.

Instruction in records and record analysis ranged from a mean of 1.9 hours in the western livestock area to a mean of 3.7 hours in the cash grain area. The 10th grade students in the southern pasture area received 1.9 hours of instruction in planning the cropping system,

Table 6. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 10th grade students, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.3	0.0	1.0	0.1	0.1	0.3
Agricultural programs and policies	0.0	0.0	0.3	0.2	0.2	0.1
Farm appraisal	0.0	0.0	0.0	0.3	0.1	0.1
Farm credit	0.3	0.1	0.2	0.3	0.3	0.3
Farm risk protection	0.0	0.3	0.0	0.1	0.0	0.1
Farm law	0.0	0.3	0.1	0.4	0.1	0.2
Farm leases	0.9	0.0	0.1	0.0	0.1	0.2
Farm safety	1.2	0.9	0.5	1.2	0.7	0.9
Marketing	0.3	0.3	1.1	0.3	0.6	0.5
Labor management	0.0	0.3	0.1	0.2	0.1	0.1
Farm buildings	0.0	0.0	0.1	0.2	0.5	0.2
Farmstead planning	0.0	0.0	0.1	0.2	0.6	0.2
Machinery management	0.1	0.3	0.3	0.1	0.4	0.2
Planning cropping systems	0.5	1.2	1.2	1.1	1.9	1.2
Planning livestock systems	0.2	0.3	0.3	0.1	0.9	0.4
Planning the farm business	0.3	0.0	0.0	0.7	1.5	0.5
Records and record analysis	1.9	3.7	2.1	2.5	2.2	2.5
Total	6.0	8.0	7.7	8.1	10.3	8.0

whereas those 10th grade students in the western livestock area received 0.5 hours of instruction.

A single classification analysis of variance was computed for each of the means and no significant F-values were observed. The null hypothesis was not rejected. There were no differences in the amounts of instruction provided to 10th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

In Table 7 are the mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 11th grade students among the economic areas.

Ho_7: There were no differences in the amounts of instruction provided to 11th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

The 11th grade students received a mean of 60.3 hours of instruction in farm business management. Those students living in the southern pasture area were provided 79.7 hours, whereas those students in the northeast dairy area were provided 45.3 hours of instruction.

The instructional unit that received most emphasis was records and record analysis with a mean of 10.3 hours. Others in which more than 4.0 hours of instruction were provided were: marketing (5.2), machinery management (5.1), farm credit (4.9), planning the livestock system (4.6), planning the farm business (4.5), and planning cropping systems (4.2).

Instruction provided for 11th grade students in records and record

Table 7. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 11th grade students, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	2.5	1.5	1.5	1.1	2.3	1.8
Agricultural programs and policies	3.4	1.1	2.2	1.3	1.9	2.0
Farm appraisal	4.0	2.2	1.6	2.4	4.0	2.8
Farm credit	4.6	6.5	3.1	4.2	6.2	4.9
Farm risk protection	1.1	3.1	1.5	1.7	3.4	2.2
Farm law	3.4	3.3	0.9	0.9	4.2	2.5
Farm leases	1.8	3.1	2.6	1.5	3.5	2.5
Farm safety	1.9	0.7	1.3	1.3	2.4	1.5
Marketing	7.2	6.1	5.3	2.7	4.5	5.2
Labor management	0.7	1.7	1.3	1.3	3.1	1.6
Farm buildings	2.6	2.6	1.1	1.7	2.2	2.0
Farmstead planning	4.9	1.9	1.4	2.4	2.3	2.6
Machinery management	2.5	4.5	3.5	7.1	7.8	5.1
Planning cropping systems	4.0	3.4	3.0	4.9	5.9	4.2
Planning livestock systems	4.0	4.1	3.5	5.3	6.2	4.6
Planning the farm business	2.9	4.4	3.7	4.1	7.3	4.5
Records and record analysis	8.9	13.1	7.9	8.9	12.6	10.3
Total	60.4	63.4	45.3	52.9	79.7	60.3

analysis ranged from 7.9 hours in the northeast dairy area to 12.6 hours in the southern pasture area. The hours of instruction provided in marketing ranged from 2.7 hours in the eastern livestock area to 7.2 hours in the western livestock area. Machinery management instruction ranged from 2.5 hours in the western livestock area to 7.8 hours in the southern pasture area.

A single classification analysis of variance revealed no significant F-values for any of the instructional units or for the total hours of instruction, thus the null hypothesis that there were no differences in the amounts of instruction provided to 11th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas was not rejected.

The mean hours of instruction in economics of farm business management provided in each instructional unit for 12th grade students among the economic areas are presented in Table 8.

Ho_8: There were no differences in the amounts of instruction provided to 12th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

A mean of 51.0 hours of instruction in farm business management was provided to 12th grade vocational agriculture students. The range among economic areas was from 36.0 hours provided in the eastern livestock area to 64.3 hours in the northeast dairy area. The four instructional units that received greatest emphasis were records and record analysis (6.6 hours), machinery management (5.5 hours), marketing

Table 8. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for 12th grade students, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	2.5	2.3	3.1	1.3	2.1	2.3
Agricultural programs and policies	3.1	1.8	1.5	1.5	1.7	1.9
Farm appraisal	3.5	2.4	7.0	1.9	3.5	3.7
Farm credit	7.5	4.1	5.0	2.1	3.4	4.4
Farm risk protection	3.3	2.5	1.5	1.3	1.6	2.0
Farm law	2.6	2.3	3.0	2.6	1.1	2.3
Farm leases	3.6	3.3	2.3	1.7	1.4	2.5
Farm safety	1.2	0.4	1.6	1.0	1.1	1.1
Marketing	3.3	5.1	4.7	3.4	5.9	4.5
Labor management	1.5	1.1	1.6	1.3	0.6	1.2
Farm buildings	2.2	1.5	2.3	1.9	1.2	1.8
Farmstead planning	2.5	1.5	4.3	1.1	2.3	2.3
Machinery management	6.3	8.3	4.9	4.6	3.3	5.5
Planning cropping systems	3.1	2.1	4.7	1.3	2.0	2.6
Planning livestock systems	3.6	2.0	4.5	1.8	2.4	2.9
Planning the farm business	2.9	4.5	5.9	2.1	1.6	3.4
Records and record analysis	5.0	10.3	6.5	5.1	5.9	6.6
Total	57.6	55.4	64.3	36.0	41.2	51.0

(4.5 hours), and farm credit (4.4 hours).

Vocational agriculture departments in the cash grain area provided 10.3 hours of instruction in records and record analysis, whereas 5.0 hours of instruction were provided by those departments in the western livestock area. Instruction in machinery management ranged from a mean of 3.3 hours in the southern pasture area to a mean of 8.3 hours in the cash grain area.

The computed single classification analysis of variance yielded no significant F-values; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction provided to 12th grade students in the various instructional units of economics of farm business management by vocational agriculture departments among the economic areas.

Presented in Table 9 are the mean hours of instruction in economics of farm business management provided by vocational agriculture departments for secondary students through small group, personal contact, and visitation methods among economic areas.

Ho_9: There were no differences in the amounts of instruction provided in economics of farm business management instructional units in secondary programs for day school students through small group, personal contact, and visitation methods among the economic areas.

Data from Table 9 reveal that the mean total hours of instruction provided in economics of farm business management ranged from a low of 14.2 hours in the eastern livestock area to a high of 54.0 hours in the western livestock area. Departments in the southern pasture area provided 18.4 hours, the cash grain area provided 20.5 hours, and those in

Table 9. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments by small group, personal contact, and visitation methods, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.3	0.0	1.2	0.3	0.7	0.5
Agricultural programs and policies	0.3	0.1	0.7	0.2	1.5	0.6
Farm appraisal	1.7	0.8	0.5	0.3	0.7	0.8
Farm credit	4.6	0.1	1.3	0.5	2.5	1.8
Farm risk protection	0.0	0.1	0.6	0.2	1.3	0.4
Farm law	0.1	0.1	0.3	0.1	0.3	0.2
Farm leases	1.5	0.9	1.8	0.3	0.7	1.0
Farm safety	5.8	0.5	1.1	1.3	0.3	1.8
Marketing	6.3	0.5	2.6	1.1	1.5	2.4
Labor management	0.0	0.3	1.3	0.1	0.3	0.4
Farm buildings	2.3	1.3	1.3	0.6	0.5	1.2
Farmstead planning	0.4	0.7	1.1	0.6	1.0	0.8
Machinery management	3.4	0.6	7.7	1.0	1.1	2.7
Planning cropping systems	4.0	2.0	4.3	1.4	1.1	2.6
Planning livestock systems	5.1	2.7	3.7	1.0	1.5	2.8
Planning the farm business	4.1	1.5	4.7	1.7	1.4	2.7
Records and record analysis	14.1	8.3	2.0	3.5	2.0	6.0
Total	54.0	20.5	36.2	14.2	18.4	28.7

the northeast dairy area provided 36.2 hours. The sample mean for number of hours of instruction provided was 28.7 hours.

Table 9 also reveals the mean hours of instruction provided in each of the instructional units in farm business management among the economic areas. The mean hours of instruction in the farm safety unit ranged from 0.3 hours in the southern pasture area to 5.8 hours in the western livestock area. Instruction in machinery management varied among the economic areas from a mean of 0.6 hours in the cash grain area to 7.7 hours in the northeast dairy area.

The mean hours of instruction provided in farm credit ranged from 0.1 hours in the cash grain area to 4.6 hours in the western livestock area. A single classification analysis of variance was computed for each of these means. The analysis of the means, presented in Table 10, revealed an F-value of 3.2640, which was significant at the .05 level of significance.

The marketing unit varied in hours of instruction provided from a low of 0.5 hours in the cash grain area to a high of 6.3 hours in the western livestock area. The computed F-value of 2.8038 is presented in Table 11, and was significant at the 0.5 level of significance.

The spread between the means for instruction provided in records and record analysis ranged from 2.0 hours in the northeast dairy and southern pasture areas to 14.1 hours in the western livestock areas. The computed F-value, shown in Table 12, of 3.4155 was significant at the .05 level of significance.

These three instructional units in economics of farm business

Table 10. Analysis of variance for the mean hours of instruction in farm credit provided for secondary students through small group, personal contact, and visitation methods, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	193.2537	48.3134	3.2640 *
WITHIN	70	1036.1328	14.8019	
TOTAL	74	1229.3865		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

Table 11. Analysis of variance for the mean hours of instruction in marketing provided for secondary students through small group, personal contact, and visitation methods, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	322.0540	80.5135	2.8038 *
WITHIN	70	2010.1328	28.7162	
TOTAL	74	2332.1868		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

Table 12. Analysis of variance for the mean hours of instruction in records and record analysis provided for secondary students through small group, personal contact, and visitation methods, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	1633.9531	408.4883	3.4155*
WITHIN	70	8371.9922	119.5999	
TOTAL	74	10005.9453		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

management had differences among the economic areas sufficiently large to reject the null hypothesis; and there were differences in the amounts of instruction provided in economics of farm business management instructional units in secondary programs for day school students through small group, personal contact, and visitation methods among the economic areas. There were no differences in the total amounts of instruction provided in economics of farm business management for day school students through small group, personal contact, and visitation methods among the economic areas.

Recorded in Table 13 are the mean hours of instruction provided in the various instructional units in economics of farm business management through the FFA among the economic areas.

Table 13. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments through the FFA, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.0	0.0	0.1	0.7	0.3	0.2
Agricultural programs and policies	0.0	0.0	0.0	0.1	0.1	0.0
Farm appraisal	0.1	0.0	0.4	0.0	0.0	0.1
Farm credit	1.0	0.0	0.9	0.1	0.0	0.4
Farm risk protection	0.0	0.0	0.2	0.1	0.0	0.1
Farm law	0.1	0.0	0.0	0.1	0.0	0.1
Farm leases	0.1	0.0	0.3	0.0	0.0	0.1
Farm safety	0.7	0.0	0.3	0.2	0.1	0.2
Marketing	1.7	0.0	0.4	0.1	0.1	0.4
Labor management	0.0	0.0	0.0	0.0	0.0	0.0
Farm buildings	0.1	0.0	0.2	0.0	0.0	0.1
Farmstead planning	0.0	0.0	0.1	0.0	0.1	0.0
Machinery management	0.0	0.0	0.2	0.0	0.0	0.0
Planning cropping systems	0.7	1.3	0.3	0.0	0.1	0.5
Planning livestock systems	0.8	0.0	0.3	0.0	0.0	0.2
Planning the farm business	0.0	0.0	0.6	0.1	0.1	0.1
Records and record analysis	0.7	2.4	1.7	0.3	0.1	1.1
Total	6.0	3.7	6.0	1.8	1.0	3.6

Ho_{10}: There were no differences in the amounts of instruction in economics of farm business management instructional units provided through the FFA among the economic areas.

A mean of 3.6 hours of instruction was provided in farm business management through the FFA. FFA members who reside in the western livestock and northeast dairy areas were provided a mean of 6.0 hours of instruction, whereas those FFA members in the southern pasture area received 1.0 hours of instruction.

The one unit in which instruction was provided through the FFA in each economic area was records and record analysis with a mean of 1.1 hours. The amount of instruction ranged from 0.1 hours provided in the southern pasture area to 2.4 hours in the cash grain area.

A single classification analysis of variance test indicated there were no significant F-values identified; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction in economics of farm business management instructional units provided through the FFA among the economic area.

The mean hours of instruction in economics of farm business management provided by vocational agriculture departments for young and adult farmers among the economic areas are presented in Table 14.

Ho_{11}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management for young and adult farmers through classroom instruction among the economic areas.

Data in Table 14 reveal that the mean total hours of instruction provided in farm business management ranged from a low of 2.8 in the cash grain area to a high of 9.7 hours in the northeast dairy area.

Table 14. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for young and adult classes, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.1	0.0	0.1	0.1	0.0	0.1
Agricultural programs and policies	0.7	0.5	0.4	1.1	0.7	0.7
Farm appraisal	0.0	0.1	0.1	0.5	0.0	0.2
Farm credit	0.9	0.4	0.7	0.6	0.6	0.6
Farm risk protection	0.2	0.0	0.5	0.5	0.3	0.3
Farm law	0.9	0.1	0.1	0.1	0.6	0.3
Farm leases	0.2	0.2	0.3	0.2	0.0	0.2
Farm safety	0.1	0.0	0.3	0.1	0.3	0.1
Marketing	1.2	0.2	0.9	0.8	0.1	0.6
Labor management	0.0	0.0	0.0	0.0	0.0	0.0
Farm buildings	0.8	0.1	0.1	0.4	0.3	0.3
Farmstead planning	0.0	0.1	0.1	0.0	0.0	0.1
Machinery management	1.5	0.3	0.3	0.3	0.3	0.5
Planning cropping systems	0.1	0.0	0.0	0.0	0.0	0.0
Planning livestock systems	0.3	0.0	0.1	0.2	0.1	0.1
Planning the farm business	0.2	0.2	1.9	0.2	0.2	0.5
Records and record analysis	1.3	0.6	3.8	0.6	0.7	1.4
Total	8.5	2.8	9.7	5.7	4.2	6.0

Vocational agriculture departments in the western livestock area provided 8.5 hours, the eastern livestock area provided 5.7, and those in the southern pasture area provided a mean of 4.2 hours. The mean number of hours of instruction provided was 6.0 hours.

The instructional unit that received the most emphasis was records and record analysis. The mean hours of instruction ranged from 0.6 hours in the cash grain and eastern livestock areas to 3.8 hours in the northeast dairy area.

The results of the single classification analysis of variance computed for each of the instructional units and for total hours of instruction revealed that significant differences existed in two instructional units. The mean hours of instruction provided in farm appraisal ranged from 0.0 hours in the western livestock and southern pasture areas to 0.5 hours in the eastern livestock area. The analysis of the means, presented in Table 15, revealed a F-value of 2.9303, which was significant at the .05 level of significance.

Instruction in farm law varied from 0.1 hours in the cash grain, northeast dairy, and eastern livestock areas to 0.9 hours in western livestock area. The computed F-value of 2.5688 is presented in Table 16 and was significant at the 0.5 level of significance. The null hypothesis was rejected. There were differences in the amounts of instruction provided in the various units of economics of farm business management for young and adult farmers through classroom instruction among the economic areas. There were no differences in the total amounts of instruction provided in economics of farm business management for young

Table 15. Analysis of variance for the mean hours of instruction in farm appraisal provided for young and adult farmers, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	2.8800	0.7200	2.9303*
WITHIN	70	17.2000	0.2457	
TOTAL	74	20.0800		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

Table 16. Analysis of variance for the mean hours of instruction in farm law provided for young and adult farmers, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	8.5334	2.1333	2.5688*
WITHIN	70	58.1333	0.8305	
TOTAL	74	66.6667		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

and adult farmers through classroom instruction among the economic areas.

Presented in Table 17 are the mean hours of instruction in economics of farm business management provided by vocational agriculture departments for young and adult farmers through small group, personal contact, and visitation methods among economic areas.

Ho_{12}: There were no differences in the amounts of instruction in economics of farm business management instructional units provided in vocational agriculture programs for young and adult farmers through small group, personal contact, and visitation methods among the economic areas.

A mean of 32.6 hours of instruction was provided in farm business management through small group, personal contact, and visitation methods for young and adult farmers. The mean total hours of instruction ranged from a low of 13.8 hours in the southern pasture area to a high of 67.7 hours in the northeast dairy area.

Data in Table 17 also reveal the mean hours of instruction by economic area provided in the various instructional units of economics in farm business management. The widest spread in hours of instruction was for records and record analysis, which ranged from 1.5 hours in the southern pasture area to 24.5 hours in the northeast dairy area.

Ranges in mean hours of instruction provided in other units of farm business management among the various economic areas were: (1) marketing, 0.9 hours in southern pasture area to 6.0 hours in northeast dairy area; (2) machinery management, 0.9 hours in eastern livestock area to 7.3 hours in the northeast dairy area; (3) farm buildings, 0.2 hours in the eastern livestock area to 5.4 hours in the cash grain area; and

Table 17. Mean hours of instruction in economics of farm business management provided by vocational agriculture departments for young and adult farmers through small group, personal contact, and visitation methods, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.7	0.1	1.4	0.8	0.1	0.6
Agricultural programs and policies	0.5	1.1	2.1	0.9	1.5	1.2
Farm appraisal	0.5	1.3	1.1	0.6	0.1	0.7
Farm credit	1.1	2.3	3.9	1.7	0.7	1.9
Farm risk protection	0.0	0.3	0.4	0.6	1.3	0.5
Farm law	0.6	0.5	0.8	0.3	0.6	0.6
Farm leases	1.1	2.1	0.7	1.3	0.7	1.2
Farm safety	0.2	0.7	1.2	0.3	0.9	0.7
Marketing	3.3	2.1	6.0	2.9	0.9	3.0
Labor management	1.3	0.1	1.3	0.3	0.1	0.6
Farm buildings	2.7	5.4	3.6	0.2	0.7	2.5
Farmstead planning	0.6	4.1	2.1	1.5	0.5	1.8
Machinery management	2.1	2.9	7.3	0.9	1.2	2.9
Planning cropping systems	1.2	2.5	2.5	1.9	0.7	1.7
Planning livestock systems	1.2	3.3	2.2	1.0	0.8	1.7
Planning the farm business	1.0	1.0	6.6	1.3	1.5	2.3
Records and record analysis	1.6	8.1	24.5	7.9	1.5	8.7
Total	19.7	37.9	67.7	24.4	13.8	32.6

(4) planning the farm business, 1.0 hours in the western livestock and cash grain areas to 6.6 hours in the northeast area.

A single classification analysis of variance revealed no significant F-values for any of the instructional units or for the total hours of instruction; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction in economics of farm business management instructional units provided in vocational agriculture programs for young and adult farmers through small group, personal contact, and visitation methods among the economic areas.

The vocational agriculture department program variables that were observed as contributing to differences in the instruction provided in economics of farm business management were: small group, personal contact, and visitations methods for secondary students in three instructional units, and classroom instruction provided young and adult farmers in two instructional units.

Relationship of Department and Instructor Variables to Instruction Provided in the Economics of Farm Business Management

To study the relationship of selected department and instructor variables to instruction provided by secondary schools in the economics of farm business management was another objective of the study. The variables selected as those which would most likely have influence on the vocational agriculture department programs were identified by the personnel involved in the major study. The selected variables were: (1) years of experience of the instructor, (2) graduate credits earned

by the instructor, (3) vocational agriculture enrollment, (4) semesters of vocational agriculture completed by the instructor, (5) participation of instructor in 4-H, (6) young and adult farmer attendance, and (7) number of supervisory visits by the instructor.

A single classification analysis of variance test was conducted for each instructional unit, level, and classification for each variable investigated, and the F-values were recorded in appropriate tables.

The mean hours and calculated F-values for instruction provided in specific units of economics of farm business management by vocational agriculture departments stratified by years of experience of the instructor are presented in Table 18.

Ho_{13}: There were no differences in the amounts of instruction in the various units of economics of farm business management provided in vocational agriculture programs among the instructors with varying years of experience.

Those instructors who provided the most instruction in farm business management (240.7 hours) had from 6 to 10 years of teaching experience, whereas those instructors who provided the least instruction (168.7 hours) had from 1 to 5 years of teaching experience.

Instructors with 6 to 10 years of experience provided the most instruction in records and record analysis (52.6 hours) and in planning the cropping system (17.1 hours). Instructors with 11 to 15 years of experience provided the most instruction in machinery management (32.1 hours) and planning the farm business (20.0 hours). Those instructors whose years of experience were 16 or above provided the most instruction in marketing (24.3 hours), planning the livestock systems (17.3

Table 18. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and years of experience of the instructor, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by years of experience of the instructor					F-value
	1 - 5 N = 36	6 - 10 N = 10	11 - 15 N = 11	16 - + N = 18	Sample mean	
Agricultural organizations and agencies	4.1	7.9	5.9	8.6	5.9	2.2078
Agricultural programs and policies	6.8	5.9	6.9	7.2	6.8	0.0622
Farm appraisal	8.4	9.9	8.0	8.2	8.5	0.1346
Farm credit	12.6	14.9	15.1	18.2	14.7	1.1248
Farm risk protection	4.6	5.8	7.0	6.6	5.6	0.6720
Farm law	5.1	7.2	6.0	8.4	6.3	1.3715
Farm leases	5.7	10.6	11.8	7.9	7.8	2.5802
Farm safety	7.0	5.2	6.7	9.3	7.3	0.3726
Marketing	13.5	19.1	16.2	24.3	17.2	1.9651
Labor management	3.1	4.5	6.3	4.7	4.1	1.5111
Farm buildings	8.4	12.7	9.3	6.2	8.6	0.8910
Farmstead planning	6.8	14.5	9.0	5.6	7.9	2.8558*
Machinery management	11.1	17.9	32.1	19.6	17.1	2.0382
Planning cropping systems	10.6	17.1	15.5	15.2	13.3	1.2394
Planning livestock systems	10.8	16.4	13.1	17.3	13.5	1.4874
Planning the farm business	9.7	18.5	20.0	15.6	14.2	1.7916
Records and record analysis	40.3	52.6	40.9	26.3	38.7	1.0471
Total	168.7	240.7	232.9	209.1	197.4	1.6172

*.05 level of significance, 2.74 at 3,71 degrees of freedom.

hours), and in farm credit (18.2 hours). Those instructors who did not rank high in terms of the hours of instruction provided in the various units had from 0 to 5 years of teaching experience.

The amount of instruction in farmstead planning provided a significant F-value of 2.8558, at the .05 level of significance, thus justifies rejection of the null hypothesis. There were differences in the amounts of instruction in the various units of economics of farm business management provided in vocational agriculture programs among the instructors with varying years of experience. There were no significant differences in the total amounts of instruction provided in economics of farm business management in vocational agriculture programs among the instructors with varying years of experience.

Data in Table 19 indicate the hours of instruction and calculated F-values for instruction in economics of farm business management provided by the level and classification of vocational agriculture programs stratified by years of experience of the instructors.

Ho_{14}: There were no differences in the amounts of instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments with instructors with varying years of experience.

The largest amounts of instruction provided in (1) Vo-Ag I, 7.3 hours, by instructors with 1 to 5 years of experience, (2) in Vo-Ag II, 12.2 hours, and Vo-Ag IV, 63.6 hours, by instructors with 6 to 10 years of experience, and (3) in Vo-Ag III, 73.1 hours, provided by instructors with 16 or more years of experience. Those instructors who provided the most Vo-Ag I, II, III, and IV instruction, 149.1 hours, in farm business

Table 19. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by years of experience of the instructor, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by years of experience					F-value
	1 - 5 N = 36	6 - 10 N = 10	11 - 15 N = 11	16 - + N = 18	Sample mean	
Vo-Ag I or 9th	7.3	6.1	6.8	6.7	6.9	0.0838
Vo-Ag II or 10th	7.5	12.2	4.4	8.9	8.0	1.1652
Vo-Ag III or 11th	54.5	64.5	54.8	73.1	60.3	0.9137
Vo-Ag IV or 12th	44.1	63.6	46.2	60.3	50.9	1.1913
Small group, personal contact, and visitation methods (day)	20.8	38.2	43.4	30.4	28.7	0.7876
FFA	4.1	0.5	3.1	4.9	3.7	0.4400
Young-adult farmer classes	7.1	3.1	6.6	5.7	6.2	0.8426
Small group, personal contact, and visitation methods (young-adult)	23.4	52.5	67.7	19.1	32.7	2.1587
Total Vo-Ag I+II+III+IV	113.4	146.4	112.2	149.1	126.2	2.0186
Total day program excluding FFA	134.1	184.6	155.5	179.4	154.9	1.9425
Total day program including FFA	138.2	185.1	158.6	184.3	158.5	1.7866
Total young-adult farmer program	30.5	55.6	74.3	24.8	38.9	1.8576
Total program (day and young-adult)	168.7	240.7	232.9	209.1	197.4	1.6172

management had 16 or more years of experience, whereas those instructors who provided the most total day instruction, 185.1 hours, had from 6 to 10 years of experience. Instructors who provided the most total young-adult farmer instruction, 74.3 hours had from 11 to 15 years of experience. The most total hours of day and young-adult program instruction, 240.7 hours, were provided by instructors with 6 to 10 years of experience.

A single classification analysis of variance failed to reveal any significant F-values; thus the null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided at various levels and to various classifications of vocational agriculture programs among the instructors with varying years of experience.

The mean hours and F-values are recorded in Table 20 for instruction in individual units of economics of farm business management provided by vocational agriculture departments classified by graduate credits earned by the instructor.

Ho_{15}: There were no differences in the amounts of instruction in the various units of economics of farm business management provided in vocational agriculture programs among the instructors with varying hours of graduate credits earned.

Those instructors who provided a mean of 244.1 hours of instruction in economics of farm business management had earned from 39 to 51 graduate credits. The least number of instructional hours, 146.3, was provided by those instructors who had from 26 to 38 graduate credits.

The hours of instruction provided in labor management were:

Table 20. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by graduate credits earned by the instructor, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by graduate credits earned by the instructor						
	0 - 12 N = 21	13 - 25 N = 18	26 - 38 N = 7	39 - 51 N = 12	52 - + N = 17	Sample mean	F-value
Agricultural organizations and agencies	4.2	5.3	5.3	9.8	6.4	5.9	1.4443
Agricultural programs and policies	7.5	6.2	4.6	10.2	5.2	6.8	0.9753
Farm appraisal	9.6	5.7	5.3	8.4	11.3	8.5	1.6020
Farm credit	11.2	13.2	15.1	16.6	18.9	14.7	1.5595
Farm risk protection	5.8	5.6	4.7	6.3	5.2	5.6	0.0907
Farm law	4.5	7.3	7.1	5.9	7.2	6.3	0.7463
Farm leases	5.6	7.7	7.0	10.2	9.2	7.8	0.9099
Farm safety	6.8	5.8	10.1	10.0	6.3	7.3	0.4551
Marketing	13.9	14.8	11.0	23.3	22.4	17.2	1.5250
Labor management	3.4	2.0	4.1	7.8	4.7	4.1	3.0733*
Farm buildings	7.9	7.4	7.6	8.4	11.2	8.6	0.3686
Farmstead planning	7.2	6.9	2.9	7.4	12.1	7.9	1.7788
Machinery management	8.4	14.1	15.3	32.4	21.0	17.1	1.9113
Planning cropping systems	12.6	13.9	9.4	12.8	15.4	13.3	0.3430
Planning livestock systems	13.0	13.9	9.0	13.6	15.2	13.5	0.3495
Planning the farm business	9.8	14.0	6.7	23.0	16.9	14.2	1.3705
Records and record analysis	44.3	36.6	21.0	38.1	41.8	38.7	0.4880
Total	175.7	180.5	146.3	244.1	230.3	197.4	1.4593

*.05 level of signficance, 2,50 at 4,70 degrees of freedom.

(1) 7.8 hours by instructors with 39 to 51 graduate credits, (2) 4.7 hours by instructors with 52 or more graduate credits, (3) 4.1 hours by instructors with 26 to 38 graduate credits, (4) 3.4 hours by instructors with 0 to 12 graduate credits, and (5) 2.0 hours provided by instructors with 13 to 25 graduate credits earned.

The single classification analysis of variance F-value of 3.0733 was significant at the .05 level of significance. The null hypothesis was rejected. There were differences in the amounts of instruction in the various units of economics of farm business management provided in vocational agriculture programs among the instructors with varying hours of graduate credits earned. There were no significant differences in the total hours of instruction provided in economics of farm business management by instructors with varying hours of graduate credits.

Table 21 reveals the mean hours and calculated F-values for instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments stratified by graduate credits earned by the instructor.

Ho_{16}: There were no differences in the amounts of instruction in economics of farm business management provided at various levels and in various programs by vocational agriculture departments stratified by hours of graduate credits earned by the instructor.

The instructors who had earned 52 or more graduate credits provided a mean of 137.6 hours of farm business management instruction in Vo-Ag I, II, III and IV, and 186.5 hours in the total day school program. Those instructors whose graduate credits ranged from 39 to 51

Table 21. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by graduate credits earned by the instructor, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by graduate credits earned by the instructor						F-value
	0 - 12 N = 21	13 - 25 N = 18	26 - 38 N = 7	39 - 51 N = 12	52 - + N = 17	Sample mean	
Vo-Ag I or 9th	6.6	7.1	7.0	8.3	6.2	6.9	0.1865
Vo-Ag II or 10th	9.1	7.7	6.3	7.5	8.1	8.0	0.1295
Vo-Ag III or 11th	49.9	70.5	51.1	66.8	61.7	60.3	0.7691
Vo-Ag IV or 12th	51.7	43.2	46.6	48.6	61.6	50.9	0.5486
Small group, personal contact, and visitation methods (day)	22.3	15.9	13.9	44.0	45.5	28.7	1.4068
FFA	3.1	0.7	8.6	6.6	3.4	3.7	1.0890
Young-adult farmer classes	6.8	7.7	4.6	4.9	5.4	6.2	0.4518
Small group, personal contact, and visitation methods (young-adult)	26.3	27.8	8.3	57.5	38.5	32.7	0.8652
Total Vo-Ag I+II+III+IV	117.2	128.4	111.0	131.1	137.6	126.2	0.3851
Total day program excluding FFA	139.5	144.3	124.9	175.0	183.1	154.9	1.2844
Total day program including FFA	142.7	145.0	133.4	181.7	186.5	158.5	1.2706
Total young-adult farmer program	33.0	35.5	12.9	62.4	43.8	38.9	0.7448
Total program (day and young-adult)	175.7	180.5	146.3	244.1	230.3	197.4	1.4593

provided 62.4 hours of instruction in the young-adult farmer programs, and a total of 244.1 hours of instruction in the day and young-adult programs.

The single classification analysis of variance revealed no significant F-values among the instructional units or total hours of instruction provided in economics of farm business management. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction in the economics of farm business management provided at the various levels and to various groups by vocational agriculture departments stratified by hours of graduate credits earned by the instructors.

The data in Table 22 reflect the mean hours and calculated F-values for instruction in individual units of economics of farm business management provided by vocational agriculture departments classified by vocational agriculture enrollments.

Ho_{17}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management among departments with varying vocational agriculture enrollments.

The data reveal that the larger the vocational agriculture enrollment, the more total hours of instruction provided in farm business management. Vocational agriculture departments whose enrollment ranged: (1) from 21 to 38 students, provided 177.9 hours; (2) from 39 to 56 students, provided 190.1 hours; (3) from 57 to 74 students, provided 204.3 hours; and (4) 75 or more students, provided 231.0 hours.

Vocational agriculture departments with 57 or more students enrolled provided the most hours of instruction in 13 of the farm

Table 22. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by vocational agriculture enrollment, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by vocational agriculture enrollment					F-value
	21 - 38 N = 17	39 - 56 N = 31	57 - 74 N = 13	75 - + N = 14	Sample mean	
Agricultural organizations and agencies	4.5	5.5	4.8	9.9	5.9	2.0827
Agricultural programs and policies	7.1	6.0	4.8	10.1	6.8	1.2450
Farm appraisal	6.2	8.2	10.1	10.2	8.5	0.9068
Farm credit	14.4	14.2	17.7	13.3	14.7	0.4740
Farm risk protection	6.6	5.6	3.1	6.5	5.6	1.0165
Farm law	6.3	6.8	5.7	5.7	6.3	0.1506
Farm leases	8.3	7.3	7.1	9.0	7.8	0.2295
Farm safety	8.4	6.3	6.7	8.6	7.3	0.2319
Marketing	12.8	14.4	24.5	22.4	17.2	2.2782
Labor management	3.6	4.9	4.0	3.1	4.1	0.4905
Farm buildings	7.1	7.9	11.6	9.0	8.6	0.5568
Farmstead planning	5.8	7.2	9.0	10.7	7.9	0.9679
Machinery management	13.4	22.3	13.1	13.9	17.1	0.7033
Planning cropping systems	13.0	13.4	12.1	14.6	13.3	0.0992
Planning livestock systems	12.5	13.2	15.4	13.6	13.5	0.1574
Planning the farm business	12.1	14.8	15.8	14.2	14.2	0.1116
Records and record analysis	35.8	32.3	39.0	56.1	38.7	1.2416
Total	177.9	190.1	204.3	231.0	197.4	0.5889

business management units, whereas those departments with 56 or less students enrolled provided the most hours of instruction in only four of the units.

The single classification analysis of variance tests revealed no significant F-values; thus the null hypothesis that there were no significant differences in the amounts of instruction provided in the various units of economics of farm business management among varying vocational agriculture enrollments was not rejected.

The mean hours and calculated F-values are reflected in Table 23 for instruction in economics of farm business management provided by level and classification, and by enrollment in the vocational agriculture departments.

Ho_{18}: There were no differences in the amounts of instruction in economics of farm business management provided, by level and classification, among vocational agriculture programs with varying vocational agriculture enrollments.

The most instruction was provided by departments with large vocational agriculture enrollments (75 or more students) in Vo-Ag I, II, III and IV (154.5 hours), in total day program (174.7 hours), in program for young-adult farmers (56.3 hours) and in the total vocational agriculture program (231.0 hours).

None of the F-values as computed by the single classification analysis of variance test were significant. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided at various levels and to various groups by vocational agriculture departments

Table 23. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by vocational agriculture enrollment, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by vocational agriculture enrollment					F-value
	21-38 N = 17	39-56 N = 31	57-74 N = 13	75- + N = 14	Sample mean	
Vo-Ag I or 9th	5.9	6.1	7.6	9.3	6.9	0.8688
Vo-Ag II or 10th	6.3	5.8	9.8	13.3	8.0	2.1898
Vo-Ag III or 11th	53.5	62.1	52.8	71.6	60.3	0.6586
Vo-Ag IV or 12th	46.5	51.8	44.4	60.4	50.9	0.4892
Small group, personal contact, and visitation methods (day)	23.7	35.0	31.8	17.9	28.7	0.4735
FFA	6.1	2.2	5.5	2.3	3.7	0.7583
Young-adult farmer classes	6.1	4.7	6.5	9.3	6.2	1.3167
Small group, personal contact, and visitation methods (young-adult)	29.8	22.4	45.8	47.0	32.7	0.7340
Total Vo-Ag I+II+III+IV	112.2	125.9	114.6	154.5	135.9	1.4931
Total day program excluding FFA	135.9	160.9	146.5	172.4	154.9	0.6523
Total day program including FFA	142.0	163.1	151.9	174.7	158.6	0.4759
Total young-adult farmer program	35.9	27.3	52.4	56.3	38.9	0.8753
Total program (day and young-adult)	177.9	190.1	204.3	231.0	197.4	0.5889

stratified by vocational agriculture enrollment.

Data in Table 24 identify the mean hours and calculated F-values for instruction in the various units of economics of farm business management provided by vocational agriculture departments grouped by the semesters of vocational agriculture completed by the instructor.

Ho_{19}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management in vocational agriculture departments among instructors with varying semesters of vocational agriculture completed.

Those instructors who provided the most instruction in farm business management (215.4 hours) had completed 2 or less semesters of vocational agriculture. Those instructors who had completed from 3 to 7 semesters of vocational agriculture provided 205.5 hours of instruction. Those instructors who provided the least hours of instruction (182.8) had completed 8 or more semesters of vocational agriculture.

Those instructors who had taken from 3 to 7 semesters of vocational agriculture provided 19.8 hours of instruction in planning the livestock systems, whereas those instructors who had completed 8 or more semesters of vocational agriculture provided the least instruction, 10.0 hours. Those instructors who had completed from 0 to 2 semesters of vocational agriculture provided 15.9 hours of instruction. These differences produced an F-value of 4.1476, which was significant at the .05 level of significance. The null hypothesis was rejected. There were differences in the amounts of instruction provided in the various units of economics of farm business management by vocational agriculture departments among instructors with varying semesters of vocational agriculture completed.

Table 24. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by semesters of vocational agriculture completed by instructor, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by semesters of vocational agriculture completed by instructor				
	0 - 2 N = 26	3 - 7 N = 11	8 - + N = 38	Sample mean	F-value
Agricultural organizations and agencies	7.7	5.5	4.9	5.9	0.3580
Agricultural programs and policies	6.5	7.3	6.9	6.8	0.0422
Farm appraisal	6.2	8.5	10.0	8.5	1.9508
Farm credit	14.6	17.3	14.0	14.7	0.4327
Farm risk protection	6.8	5.5	4.7	5.6	0.9294
Farm law	7.5	8.1	4.9	6.3	2.1915
Farm leases	7.8	6.6	8.1	7.8	0.1546
Farm safety	9.0	4.6	6.9	7.3	0.7083
Marketing	21.4	17.1	14.4	17.2	1.5182
Labor management	4.9	4.4	3.5	4.1	0.6242
Farm buildings	7.3	7.6	9.7	8.6	0.4810
Farmstead planning	6.5	7.7	8.8	7.9	0.5390
Machinery management	21.8	18.1	13.6	17.1	0.7944
Planning cropping systems	14.7	18.9	10.7	13.3	2.3788
Planning livestock systems	15.9	19.8	10.0	13.5	4.1476*
Planning the farm business	17.5	12.3	12.6	14.2	0.5968
Records and record analysis	39.2	36.3	39.1	38.7	0.0239
Total	215.4	205.5	182.8	197.4	0.6230

*.05 level of significance, 3.13 at 3,72 degrees of freedom.

There were no significant differences in the total amounts of instruction in economics of farm business management provided by vocational agriculture departments among instructors with varying semesters of vocational agriculture completed.

The mean hours and calculated F-values for instruction in economics of farm business management provided, by level and classification, by vocational agriculture departments grouped by the semesters of vocational agriculture completed by the instructor are recorded in Table 25.

Ho_{20}: There were no differences in the amounts of instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments with instructors with varying semesters of vocational agriculture completed.

The most instruction provided in farm business management, 133.8 hours for Vo-Ag I, II, III, and IV and 45.8 hours in young-adult farmer programs was provided by those instructors who had completed from 0 to 2 semesters of vocational agriculture. Those instructors who provided 176.0 hours of instruction in the total day school program had completed from 3 to 7 semesters of vocational agriculture.

The single classification analysis of variance yielded no significant F-values; therefore, the null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management, by level and classification provided by vocational agriculture departments with instructors with varying semesters of vocational agriculture completed.

Table 26 identifies the mean hours and calculated F-values for

Table 25. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by semesters of vocational agriculture completed by instructor, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by semesters of vocational agriculture completed by instructor				
	0 - 2 N = 26	3 - 7 N = 11	8 - + N = 38	Sample mean	F-value
Vo-Ag I or 9th	8.6	7.1	5.7	6.9	1.4197
Vo-Ag II or 10th	7.9	8.9	7.8	8.0	0.0506
Vo-Ag III or 11th	58.8	51.5	63.9	60.3	0.4106
Vo-Ag IV or 12th	58.8	56.2	44.1	50.9	1.2572
Small group, personal contact, and visitation methods (day)	32.5	50.3	19.8	28.7	1.8485
FFA	3.2	1.9	4.5	3.7	0.3251
Young-adult farmer classes	6.6	2.5	6.9	6.2	1.6401
Small group, personal contact, and visitation methods (young-adult)	39.2	26.9	30.0	32.7	0.2246
Total Vo-Ag I+II+III+IV	133.8	123.8	121.6	126.2	0.3158
Total day program excluding FFA	166.4	174.1	141.4	154.9	1.1499
Total day program including FFA	169.5	176.0	145.9	158.5	0.9587
Total young-adult farmer program	45.8	29.5	36.9	38.9	0.2785
Total program (day and young-adult)	215.4	205.5	182.8	197.4	0.6230

Table 26. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by participation of instructor in 4-H, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by participation of instruction in 4-H				
	0 - 3 N = 49	4 - 7 N = 12	8 - + N = 14	Sample mean	F-value
Agricultural organizations and agencies	6.2	7.6	3.6	5.9	1.2556
Agricultural programs and policies	6.9	8.7	4.9	6.8	0.7666
Farm appraisal	7.9	11.4	7.9	8.5	1.0436
Farm credit	15.7	15.3	10.6	14.7	1.3977
Farm risk protection	5.3	7.9	4.4	5.6	1.1853
Farm law	6.6	7.3	4.3	6.3	1.0239
Farm leases	8.2	8.2	5.9	7.8	0.5188
Farm safety	8.4	4.8	5.6	7.3	0.8093
Marketing	18.2	15.6	15.1	17.2	0.2792
Labor management	4.3	3.5	3.9	4.1	0.1708
Farm buildings	9.0	9.3	6.4	8.6	0.3833
Farmstead planning	8.2	9.3	5.6	7.9	0.6497
Machinery management	18.1	15.1	15.3	17.1	0.1089
Planning cropping systems	14.6	11.1	10.5	13.3	0.8729
Planning livestock systems	14.2	13.1	11.3	13.5	0.3314
Planning the farm business	13.9	16.0	13.9	14.2	0.0634
Records and record analysis	37.7	34.3	45.9	38.7	0.3184
Total	203.6	198.3	175.1	197.4	0.3188

instruction provided in the various units of economics of farm business management by vocational agriculture departments categorized by instructors participation in 4-H.

Ho_{21}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management among vocational agriculture departments whose instructors had varying years of participation in 4-H.

The largest amount of instruction in farm business management (203.6 hours) was provided by those instructors who had from 0 to 2 years of participation in 4-H. Those instructors also provided the largest amounts of instruction in marketing (18.2 hours), in machinery management (18.1 hours), in farm credit (15.7 hours), in planning cropping systems (14.6 hours), and in planning livestock systems (14.2 hours).

Instructors who had completed 8 or more years of participation in 4-H provided 45.9 hours of instruction in records and record analysis, whereas those instructors who had completed from 4 to 7 years of participation provided 34.3 hours of instruction. The latter classification provided the most hours of instruction in planning the farm business (16.0 hours) and in farm appraisal (11.4 hours).

The computed single classification analysis of variance test indicated no significant F-values for the various instructional units or for the total mean hours of instruction. The null hypothesis was not rejected that there were no significant differences in the amounts of instruction provided in the various units of economics of farm business management among vocational agriculture departments whose instructors had varying years of participation in 4-H.

Data in Table 27 present the mean hours and calculated F-values for instruction in economics of farm business management provided by level and classification, by vocational agriculture departments, grouped by participation of the instructor in 4-H.

Ho_{22}: There were no differences in the amounts of instruction in economics of farm business management provided at various levels and for various groups by instructors with varying years of participation in 4-H.

It was observed that those instructors who provided the most hours (203.6) of total day and young-adult farmer instruction had participated from 0 to 2 years in 4-H. This group of instructors also provided the most instruction (44.3 hours) in the total young-adult farmer program.

It was further observed that those instructors who had participated from 4 to 7 years in 4-H provided the most instruction in Vo-Ag I, II, III, and IV (150.2 hours) and in the total day programs (176.1 hours).

There were no significant F-values observed when the single classification analysis of variance tests were administered. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided at various levels and for various classifications of vocational agriculture programs among instructors with varying years of participation in 4-H.

The mean hours and calculated F-values for instruction provided in the various units of economics of farm business management by vocational agriculture departments, classified by young and adult farmer attendance are recorded in Table 28.

Table 27. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by participation of instructor in 4-H, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by participation of instructor in 4-H				
	0 - 3 N = 49	4 - 7 N = 12	8 - + N = 14	Sample mean	F-value
Vo-Ag I or 9th	6.7	6.6	8.0	6.9	0.2124
Vo-Ag II or 10th	7.7	8.9	8.5	8.0	0.0951
Vo-Ag III or 11th	57.7	76.8	55.4	60.3	1.1630
Vo-Ag IV or 12th	50.7	57.9	45.6	50.9	0.3368
Small group, personal contact, and visitation methods (day)	31.8	24.8	21.2	28.7	0.3025
FFA	4.7	1.2	2.1	3.7	0.8058
Young-adult farmer classes	6.1	6.0	6.4	6.2	0.0121
Small group, personal contact, and visitation methods (young-adult)	38.1	16.2	27.9	32.7	0.6498
Total Vo-Ag I+II+III+IV	122.8	150.2	117.4	126.2	1.1567
Total day program excluding FFA	154.6	174.9	138.6	154.9	0.6729
Total day program including FFA	159.3	176.1	140.7	158.5	0.6198
Total young-adult farmer program	44.3	22.2	34.4	38.9	0.5953
Total program (day and young-adult)	203.6	198.3	175.1	197.4	0.3188

Table 28. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by young and adult farmer attendance, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by young and adult farmer attendance					F-value
	0-199 N = 23	200-299 N = 31	300-399 N = 11	400-+ N = 10	Sample mean	
Agricultural organizations and agencies	6.7	5.1	7.5	5.0	5.9	0.5012
Agricultural programs and policies	7.4	6.9	4.7	7.6	6.8	0.3390
Farm appraisal	7.6	8.8	9.4	8.3	8.5	0.1639
Farm credit	11.4	17.9	17.5	9.2	14.7	3.2875*
Farm risk protection	6.6	4.7	5.5	6.0	5.6	0.4050
Farm law	7.4	5.4	8.6	3.9	6.3	1.6528
Farm leases	6.3	8.4	10.5	6.4	7.8	0.9358
Farm safety	5.4	7.7	11.7	5.4	7.3	1.0408
Marketing	16.0	17.3	22.5	14.2	17.2	0.5562
Labor management	3.9	4.8	4.7	1.8	4.1	1.0587
Farm buildings	5.5	8.5	16.5	7.4	8.6	3.2417*
Farmstead planning	6.6	7.2	12.4	7.9	7.9	1.3051
Machinery management	13.6	21.6	20.8	7.4	17.1	1.0059
Planning cropping systems	12.3	12.8	22.5	7.1	13.3	3.4553*
Planning livestock systems	13.3	13.0	20.5	7.5	13.5	2.3193
Planning the farm business	10.5	18.4	14.6	9.6	14.2	1.0303
Records and record analysis	31.6	35.7	51.2	50.6	38.7	0.9874
Total	172.0	204.1	261.1	165.3	197.4	1.7971

*.05 level of significance, 2.74 at 3,71 degrees of freedom.

Ho_{23}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management among vocational agriculture departments with varying young and adult farmer attendance.

The data revealed that a mean of 261.1 hours of instruction was provided in those departments in which 300 to 399 young and adult farmers had been enrolled.

Those instructors who had from 300 to 399 young and adult farmers in attendance provided 22.5 hours of instruction in planning cropping systems, whereas those instructors who had 400 or more young and adult farmers in attendance provided only 7.1 hours of instruction. The instructors in the 200 to 299 attendance group provided more instruction than did those in the 0 to 199 attendance group. The range of differences in hours of instruction produced an F-value of 3.4553, which was significant at the .05 level of significance.

When a comparison was made of instruction provided in farm credit among the young and adult farmer attendance categories, the hours of instruction ranged from 9.2 hours by the 400 or more attendance group to 17.9 hours by the 200 to 299 attendance group. A significant F-value of 3.2875 was observed at the .05 level of significance.

Generally, as the attendance categories increased in numbers, the hours of instruction provided in farm buildings increased. The hours ranged from 5.5 provided by those departments with 0 to 199 young and adult farmers in attendance to 16.5 hours provided by departments with 300 to 399 young and adult farmers in attendance. This range of hours provided a significant F-value of 3.2417 at the .05 level of significance.

The significant F-values produced resulted in the rejection of the null hypothesis. There were differences in the amounts of instruction provided in the various units of economics of farm business management among vocational agriculture departments with varying young and adult farmer attendance. There were no significant differences in the total amount of instruction in economics of farm business management provided among vocational agriculture departments with varying young and adult farmer attendance.

Data in Table 29 indicate the mean hours and calculated F-values for instruction provided in the various units of economics of farm business management by level and classification, by vocational agriculture departments stratified by young and adult farmer attendance.

Ho_{24}: There were no differences in the amounts of instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments with varying attendance by young and adult farmers.

The mean hours of instruction provided through small group, personal contact, and visitation methods for day students ranged from 2.8 hours for those instructional programs in which 400 or more young and adult farmers were in attendance, to 55.8 hours in schools in which 300 to 399 young and adult farmers were in attendance. This range revealed an F-value of 3.4302, significant at the .05 level of significance.

Three significant F-values at the .05 level of confidence were observed in comparing hours of instruction with young and adult farmer enrollments. The classifications and F-values were: (1) young-adult

Table 29. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by young and adult farmer attendance, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by young and adult farmer attendance					F-value
	0-199 N = 23	200-299 N = 31	300-399 N = 11	400 - + N = 10	Sample mean	
Vo-Ag I or 9th	7.0	5.9	9.5	7.0	6.9	0.7669
Vo-Ag II or 10th	9.7	6.8	7.9	8.0	8.0	0.3587
Vo-Ag III or 11th	72.7	59.4	50.3	45.7	60.3	1.3659
Vo-Ag IV or 12th	55.3	50.4	52.9	40.1	50.9	0.3746
Small group, personal contact, and visitation methods (day)	14.6	37.9	55.8	2.8	28.7	3.4302*
FFA	1.2	4.2	8.6	2.1	3.7	1.5045
Young-adult farmer classes	4.3	6.3	4.2	12.3	6.2	3.4513*
Small group, personal contact, and visitation methods (young-adult)	7.1	33.1	71.9	47.3	32.7	3.2225*
Total Vo-Ag I+II+III+IV	144.7	122.5	120.6	100.8	126.2	1.3800
Total day program excluding FFA	159.3	160.5	176.5	103.6	154.9	1.8031
Total day program including FFA	160.5	164.7	185.1	105.7	158.5	1.9603
Total young-adult farmer program	11.4	39.4	76.1	59.6	35.9	3.1795*
Total program (day and young-adult)	171.9	204.1	261.1	165.3	197.4	1.7971

*.05 level of significance, 2.74 at 3,71 degrees of freedom.

farmer classes, 3.4513; (2) young-adult farmer small groups, personal contact, and visitation methods, 3.2225; and (3) total young-adult farmer program, 3.1795.

These four significant F-values thus justified the rejection of the null hypothesis. There were differences in the amounts of instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments with varying attendance by young and adult farmers. There were no significant differences observed in the amounts of farm business management instruction provided in the total program among vocational agriculture departments with varying attendance by young and adult farmers.

The mean hours and calculated F-values for instruction provided in the various units of economics of farm business management stratified by the number of supervisory visits made by the vocational agriculture instructor are observed in Table 30.

Ho_{25}: There were no differences in the amounts of instruction provided in the economics of farm business management among the instructors who made varying numbers of supervisory visits.

The total hours of instruction in farm business management generally increased as the number of supervisory visits made by the instructor increased. The single classification analysis of variance test conducted on those means revealed an F-value of 5.4930, highly significant at the .01 level of significance.

Two of the instructional units revealed highly significant F-values at the .01 level of significance. Those areas and respective F-values observed were: (1) farmstead planning, 8.1481, and (2) records

Table 30. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by instructional unit, and by number of supervisory visits by the instructor, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by number of supervisory visits by the instructor					F-value
	0-199 N = 29	200-299 N = 24	300-399 N = 11	400-+ N = 11	Sample mean	
Agricultural organizations and agencies	4.4	8.0	3.8	7.6	5.9	1.8199
Agricultural programs and policies	6.4	6.6	5.5	9.6	6.8	0.6169
Farm appraisal	5.7	9.6	8.6	13.2	8.5	3.0123*
Farm credit	13.0	13.5	16.9	19.5	14.7	1.3405
Farm risk protection	5.2	5.0	6.0	7.5	5.6	0.4718
Farm law	5.3	6.3	5.9	9.4	6.3	1.2910
Farm leases	6.7	7.7	8.4	10.3	7.8	0.6190
Farm safety	7.8	6.5	3.2	11.7	7.3	1.3199
Marketing	12.5	15.3	23.1	28.2	17.2	3.5505*
Labor management	3.7	4.1	3.0	6.5	4.1	1.1445
Farm buildings	5.3	8.9	7.4	17.7	8.6	4.6400*
Farmstead planning	5.4	7.2	5.6	18.1	7.9	8.1481**
Machinery management	12.0	19.3	21.2	21.8	17.1	0.6348
Planning cropping systems	11.0	13.5	11.4	21.0	13.3	2.0885
Planning livestock systems	11.1	12.9	12.8	21.5	13.5	2.2542
Planning the farm business	8.8	17.8	15.4	19.7	14.2	1.4752
Records and record analysis	39.2	27.7	27.5	72.5	38.7	4.1142**
Total	163.5	189.5	185.7	315.8	197.4	5.4930**

*.05 level of significance, 2.74 at 3,71 degrees of freedom.

**.01 level of significance, 4.08 at 3,71 degrees of freedom.

and record analysis, 4.1142.

Three of the farm business management instructional units revealed significant F-values at the .05 level of significance. Those areas and respective F-values observed included: (1) farm appraisal, 3.0123; (2) marketing, 3.5505; and (3) farm buildings, 4.6400.

These F-values were significant thus the null hypothesis was rejected. There were differences in the amounts of instruction provided in economics of farm business management among the instructors who made varying number of supervisory visits. There were highly significant differences in the amounts of farm business management instruction provided in the total vocational agriculture program among instructors who made varying number of supervisory visits.

Data recorded in Table 31 reveal the mean hours and calculated F-values for instruction in economics of farm business management by level and classification, provided by vocational agriculture departments grouped by the number of supervisory visits made by the instructors.

Ho_{26}: There were no differences in the amounts of instruction in economics of farm business management, by level and classification, provided by vocational agriculture departments with instructors who made varying numbers of supervisory visits.

A highly significant F-value was observed when a single classification analysis of variance test was applied to the day and young-adult instruction program by vocational agriculture departments in economics of farm business management. The F-value observed was 5.4930 and was significant at the .01 level of significance. The total amount of

Table 31. Mean hours and calculated F-values for instruction in economics of farm business management provided by vocational agriculture departments by level, classification, and by number of supervisory visits by the instructor, 1970-71

Level and classification	Mean hours of economics of farm business management instruction by number of supervisory visits by the instructor					F-value
	0-199 N = 29	200-299 N = 24	300-399 N = 11	400 - + N = 11	Sample mean	
Vo-Ag I or 9th	5.8	7.2	7.4	8.9	6.9	0.5916
Vo-Ag II or 10th	6.7	9.6	6.9	9.2	8.0	0.4515
Vo-Ag III or 11th	54.6	64.6	59.1	70.1	60.3	0.5503
Vo-Ag IV or 12th	45.7	49.9	58.7	59.0	50.9	0.4972
Small group, personal contact, and visitation methods (day)	20.4	22.8	34.4	57.9	28.7	1.8483
FFA	5.7	1.8	0.6	5.5	3.7	1.1316
Young-adult farmer classes	6.6	5.5	5.8	6.8	6.2	0.1241
Small group, personal contact, and visitation methods (young-adult)	19.1	28.2	12.8	98.4	32.7	5.9994**
Total Vo-Ag I+II+III+IV	111.8	131.3	132.1	147.2	126.2	1.0721
Total day program excluding FFA	132.1	154.0	166.5	205.1	154.9	2.4939
Total day program including FFA	137.8	155.8	167.1	210.6	158.5	2.3328
Total young-adult farmer program	25.7	33.7	18.6	105.2	38.9	5.4713**
Total program (day and young-adult)	163.5	189.5	185.7	315.8	197.4	5.4930**

**.01 level of significance, 4.08 at 3,71 degrees of freedom.

instruction ranged from a mean of 163.5 hours to 315.8 hours.

F-values, highly significant at the .01 level of significance, were also observed in the following two classifications: (1) young-adult farmer small group, personal contact, and visitation methods, 5.9994, and (2) young-adult farmer instructional program, 5.4713. The latter classification provided the widest range in hours of instruction--that of 18.6 hours where the number of supervisory visits made by the instructor were from 300 to 399 to 105.2 hours where the number of supervisory visits made were 400 or more.

Those highly significant F-values observed justified rejection of the null hypothesis. There were highly significant differences in the amounts of instruction in economics of farm business management provided by vocational agriculture departments with instructors who made varying numbers of supervisory visits. There were highly significant differences observed in the amounts of instruction provided in economics of farm business management to the day and young-adult farmer program with instructors who made varying number of supervisory visits.

The selected department and instructor variables contributing to differences in the instruction provided in economics of farm business management were: total number of supervisory visits with six significant F-values; young and adult farmer attendance with three; and years of experience of the instructor, graduate credits earned by the instructor, and semesters of vocational agriculture completed by the instructor, with one each.

County Cooperative Extension Service Programs

An objective of the study was to determine the content and emphasis of instruction in economics of farm business management provided in county cooperative extension service programs. To accomplish this objective, the county cooperative extension service program was divided into two classifications. The two identified classifications were: (1) day and (2) adults.

A single classification analysis of variance test was conducted for each instructional unit and classification among the economic areas by the variable investigated, and the F-values that were significant are identified in the tables with the summarization of the economic area comparisons.

The mean hours of instruction in the identified units in economics of farm business management provided by the county cooperative extension services, by classification of program, are presented in Table 32. It was observed that a mean of 97.6 hours of instruction in economics of farm business management was provided to adults, whereas youth were provided with a mean of only 2.4 hours of instruction.

Table 32 further revealed a mean of 34.7 hours of instruction in farm business management was provided in planning the farm business, 19.2 hours in records and record analysis, 18.3 hours in marketing, 7.9 hours in farm law, 5.7 hours in farm leases, 4.7 hours in planning livestock systems, 3.8 hours in farm safety, 3.2 hours in farm credit, and 1.6 hours in planning cropping systems.

Eight of the individual units with little or no instruction

Table 32. Mean hours of instruction in economics of farm business management provided by county cooperative extension services, by classification, 1970-71

Instructional unit	Mean hours of instruction by classification		
	Youth	Adult	Sample mean
Agricultural organizations and agencies	0.0	0.0	0.0
Agricultural programs and policies	0.0	0.3	0.4
Farm appraisal	0.0	0.0	0.0
Farm credit	0.0	3.2	3.2
Farm risk protection	0.0	0.1	0.1
Farm law	0.3	7.6	7.9
Farm leases	0.1	5.6	5.7
Farm safety	0.7	3.0	3.8
Marketing	0.1	18.2	18.3
Labor management	0.0	0.0	0.0
Farm buildings	0.0	0.1	0.1
Farmstead planning	0.0	0.1	0.1
Machinery management	0.0	0.3	0.3
Planning cropping systems	0.1	1.6	1.6
Planning livestock systems	0.2	4.6	4.7
Planning the farm business	0.6	34.1	34.7
Records and record analysis	0.4	18.8	19.2
Total	2.4	97.6	100.0

provided were: (1) agricultural programs and agencies, 0.4 hours; (2) machinery management, 0.3 hours; (3) farm risk protection, 0.1 hours; (4) farm buildings, 0.1 hours; (5) farmstead planning, 0.1 hours; (6) agricultural organizations and agencies, 0.0 hours; (7) farm appraisal, 0.0 hours; and (8) labor management, 0.0 hours.

County cooperative extension directors provided 40 hours of instruction to adults in economics of farm business management for each one hour of instruction provided to youth.

Table 33 reveals the mean hours of instruction provided in each instructional unit in each economic area.

Ho_{27}: There were no differences in the total amounts of instruction in economics of farm business management provided by county cooperative extension services among the economic areas.

The cash grain area provided the most instruction (111.2 hours) in farm business management. The eastern livestock area provided the second largest amount of instruction (106.9 hours). The western livestock area ranked third with a mean of 95.7 hours, and was followed closely by the northeast dairy area with a mean of 95.1 hours. The southern pasture area provided the least instruction (91.2 hours) in farm business management.

A single analysis classification of variance was calculated for the mean hours of instruction provided in each economic area. The F-value (0.1086) was not significant at the .05 level of significance and the null hypothesis was not rejected. There were no differences in the amounts of instruction in economics of farm business management provided by county cooperative extension services among the economic

Table 33. Mean hours of instruction provided in economics of farm business management by county cooperative extension services, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0
Agricultural programs and policies	0.3	0.4	0.4	0.3	0.4	0.4
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0
Farm credit	2.0	4.3	5.8	1.6	2.5	3.2
Farm risk protection	0.3	0.0	0.0	0.1	0.0	0.1
Farm law	11.1	11.4	2.5	8.9	5.7	7.9
Farm leases	6.3	6.7	4.2	5.9	5.4	5.7
Farm safety	3.3	5.8	3.7	3.1	2.9	3.8
Marketing	11.6	15.2	33.3	14.2	17.2	18.3
Labor management	0.0	0.0	0.0	0.0	0.0	0.0
Farm buildings	0.0	0.0	0.1	0.3	0.0	0.1
Farmstead planning	0.2	0.3	0.0	0.0	0.1	0.1
Machinery management	0.0	0.5	0.1	0.2	0.5	0.3
Planning cropping systems	0.7	0.9	3.1	1.9	1.6	1.6
Planning livestock systems	1.8	3.0	4.7	7.7	6.5	4.7
Planning the farm business	37.4	38.3	28.9	38.3	30.5	34.7
Records and record analysis	20.7	24.5	8.4	24.3	17.9	19.2
Total	95.7	111.2	95.1	106.9	91.2	100.0

areas.

Ho_{28}: There were no differences in the amounts of instruction provided in the various instructional units in economics of farm business management by county cooperative extension services among the economic areas.

Table 33 further reveals that instruction in planning the farm business ranged from 28.9 hours in the northeast dairy area to 38.3 hours in the cash grain and eastern livestock areas. Ranges in mean hours of instruction in other instructional units provided by county cooperative extension services among the economic areas included: (1) records and record analysis, northeast dairy area (8.4 hours) to cash grain area (24.5 hours); (2) farm law, northeast dairy area (2.5 hours) to cash grain area (11.4 hours); (3) farm leases, northeast dairy area (4.2 hours) to cash grain area (6.7 hours); (4) planning livestock systems, western livestock area (1.8 hours) to eastern livestock area (7.7 hours); and (5) farm safety, southern pasture area (2.9 hours) to cash grain area (5.8 hours).

Instruction in marketing accorded the widest range in hours from a low of 11.6 hours in the western livestock area to 33.3 hours in the northeast dairy area. A single classification analysis of variance was computed for each of the means in marketing and the analysis, as presented in Table 34, reveal an F-value of 2.7809, significant at the .05 level of significance. The null hypothesis was rejected. There were differences in the amounts of instruction provided in the various instructional units of economics of farm business management by county cooperative extension services among the economic areas.

Table 34. Analysis of variance for the mean hours of marketing instruction provided by county cooperative extension services for youth and adults, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	4484.9375	1121.2344	2.7809*
WITHIN	70	28223.7305	403.1960	
TOTAL	74	32708.6680		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

Data in Table 35 identify the mean hours of instruction in economics of farm business management provided by county cooperative extension services for youth among the economic areas.

Ho_{29}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management for youth by county cooperative extension services among the economic areas.

A mean of 2.4 hours of instruction was provided to youth in farm business management. The range among economic areas was from 1.3 hours in the northeast dairy area to 5.7 hours in the cash grain area.

The instructional unit that received the most emphasis was farm safety with a mean of 0.7 hours. County cooperative extension services in the cash grain area provided 2.3 hours of instruction, whereas 0.1 hours were provided in the eastern livestock and southern pasture areas.

Table 35. Mean hours of instruction in economics of farm business management provided by county cooperative extension services for youth, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0
Agricultural programs and policies	0.0	0.0	0.0	0.0	0.1	0.0
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0
Farm credit	0.1	0.0	0.0	0.0	0.0	0.0
Farm risk protection	0.0	0.0	0.0	0.0	0.0	0.0
Farm law	0.1	1.2	0.0	0.2	0.1	0.3
Farm leases	0.1	0.1	0.0	0.0	0.2	0.1
Farm safety	1.0	2.3	0.3	0.1	0.1	0.7
Marketing	0.1	0.1	0.0	0.3	0.0	0.1
Labor management	0.0	0.0	0.0	0.0	0.0	0.0
Farm buildings	0.0	0.0	0.0	0.0	0.0	0.0
Farmstead planning	0.0	0.0	0.0	0.0	0.0	0.0
Machinery management	0.0	0.0	0.0	0.0	0.1	0.0
Planning cropping systems	0.0	0.0	0.1	0.1	0.1	0.1
Planning livestock systems	0.0	0.1	0.2	0.1	0.3	0.2
Planning the farm business	0.2	0.9	0.7	0.4	0.7	0.6
Records and record analysis	0.1	1.1	0.1	0.3	0.3	0.4
Total	1.5	5.7	1.3	1.5	2.1	2.4

The computed single classification analysis of variance test yielded no significant F-values; therefore, the null hypothesis was not rejected. There were no differences in the amounts of instruction provided to youth in the various instructional units of economics of farm business management by county cooperative extension services among the economic areas.

The mean hours of instruction in economics of farm business management provided by county cooperative extension services for adults among the economic areas are presented in Table 36.

Ho_{30}: There were no differences in the amounts of instruction provided in the various instructional units of economics of farm business management for adults by county cooperative extension services among the economic areas.

Data from Table 36 reveal that the mean total hours of instruction provided in farm business management ranged from a low of 89.1 hours in the southern pasture area to 105.5 hours in the cash grain area. County cooperative extension services in the eastern livestock area provided 105.4 hours, the western livestock area provided 94.2 hours, and those in the northeast dairy area provided 93.8 hours. The mean number of hours of instruction provided was 97.6 hours.

The unit that received most emphasis (34.1 hours) was planning the farm business. The hours of instruction ranged from 28.3 hours in the northeast dairy area to 37.9 hours in the eastern livestock area. The records and record analysis unit ranked second with a mean of 18.8 hours.

The results of the single classification analysis of variance

Table 36. Mean hours of instruction in economics of farm business management provided by county cooperative extension services for adults, by economic area, 1970-71

Instructional unit	Mean hours of instruction by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0
Agricultural programs and policies	0.3	0.4	0.4	0.3	0.3	0.3
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0
Farm credit	1.9	4.3	5.8	1.6	2.5	3.2
Farm risk protection	0.3	0.0	0.0	0.1	0.0	0.1
Farm law	11.1	10.2	2.5	8.7	5.6	7.6
Farm leases	6.2	6.6	4.2	5.9	5.2	5.6
Farm safety	2.3	3.5	3.4	3.1	2.7	3.0
Marketing	11.5	15.1	33.3	13.9	17.0	18.2
Labor management	0.0	0.0	0.0	0.0	0.0	0.0
Farm buildings	0.0	0.0	0.1	0.3	0.0	0.1
Farmstead planning	0.2	0.3	0.0	0.0	0.1	0.1
Machinery management	0.0	0.5	0.1	0.2	0.5	0.3
Planning cropping systems	0.7	0.9	2.3	1.8	1.5	1.6
Planning livestock systems	1.8	2.9	4.5	7.5	6.2	4.6
Planning the farm business	37.2	37.4	28.3	37.9	29.9	34.1
Records and record analysis	20.6	23.4	8.3	24.0	17.6	18.8
Total	94.2	105.5	93.8	105.4	89.1	97.6

Table 37. Analysis of variance for the mean hours of marketing instruction provided by county cooperative extension services for adults, by economic area, 1970-71

Source of variation	d.f.	Sum of squares	Mean square	F
BETWEEN	4	4537.6602	1134.4150	2.8328*
WITHIN	70	28031.7266	400.4531	
TOTAL	74	32569.3867		

*.05 level of significance, 2.50 at 4,70 degrees of freedom.

presented in Table 37 revealed that significant differences existed in the marketing unit. The mean hours of instruction ranged from 11.5 hours in the western livestock area to 33.3 hours in the northeast dairy area. The F-value of 2.8328 was significant at the .05 level of significance. The null hypothesis was rejected. There were differences in amounts of instruction provided individual units, but no differences in the total amount of economics of farm business management instruction provided to adults among the economic areas.

The mean number of contacts made to youth and adults by cooperative extension directors among the economic areas are recorded in Table 38. The mean for total contacts made in economics of farm business management was 904.8. The mean contacts by economic area are as follows: (1) eastern livestock area, 1625.5 contacts; (2) cash grain

Table 38. Mean number of contacts made by the county cooperative extension services by classification, and by economic area, 1970-71

	Mean contacts by economic area					Sample mean
	Western livestock	Cash grain	Northeast dairy	Eastern livestock	Southern pasture	
Total youth in economics of farm business management	17.4	33.2	10.7	36.5	47.8	29.1
Total adult in economics of farm business management	626.9	945.4	661.5	1,589.1	556.1	875.8
Total youth and adults in economics of farm business management	644.1	978.6	672.2	1,625.5	603.9	904.8
Total youth contacts	7,496.3	14,815.9	8,000.1	9,318.2	5,210.3	8,968.2
Total adult contacts	12,267.1	17,540.2	10,935.7	11,919.9	7,209.9	11,974.6
Total youth-adult contacts	19,763.4	32,356.1	18,935.7	21,238.1	12,420.2	20,942.7

area, 978.6 contacts; (3) northeast dairy area, 672.2 contacts; (4) western livestock area, 644.1 contacts; and (5) southern pasture area, 603.9 contacts. The total adult contacts (875.8) represented 96.8 percent of the total contacts made in farm business management, whereas total youth contacts made represented only 3.2 percent.

When comparing the contacts made in farm business management with the total contacts made by county cooperative extension directors, 1970-71, the following observations were noted: (1) the total farm business management contacts (904.8) represented 4.3 percent of the total youth-adult contacts (20,942.7); (2) the total farm business management adult contacts (875.8) represented 7.3 percent of the total adult contacts (11,974.6); and (3) the total farm business management youth contacts (29.1) represented 0.3 percent of the total youth contacts (8,968.2).

The county cooperative extension service program variables that were observed as contributing to differences in the instruction provided in economics of farm business management were: (1) marketing instruction by youth and adults, and (2) marketing instruction by adults.

Relationship of County Extension Director Variables to Instruction Provided in the Economics of Farm Business Management

To determine the relationship of selected county extension director variables to instruction provided by county cooperative extension services in the economics of farm business management was another objective of the study. The variables selected as those which would most

likely have influence on the county cooperative extension service programs were identified by the personnel involved in the major study. The selected variables were: (1) years of experience of director, (2) graduate credits earned by director, (3) semesters of vocational agriculture completed by director, (4) 4-H participation of director, and (5) total contacts made by director.

A single classification analysis of variance test was conducted for each instructional unit, level, and classification for each variable investigated and the F-values were recorded in appropriate tables.

The mean hours and calculated F-values for instruction provided in specific units of economics of farm business managsment by county cooperative extension services stratified by years of experience of director are presented in Table 39.

Ho_{31}: There were no differences in the amounts of instruction in the various units of economics of farm business management provided in county cooperative extension service programs among directors with varying years of experience.

Those directors with 1 to 5 years of experience provided the most instruction in farm business management (121.5 hours), whereas those directors whose years of experience ranged from 6 to 10 provided the least hours of instruction (83.0).

The instructional unit of planning the farm business included the most instruction (34.7 hours). A mean of 19.2 hours of instruction was provided in records and record analysis, and 18.3 hours of instruction was provided in marketing.

Directors with 1 to 5 years of experience provided the most

Table 39. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by instructional unit, and by years of experience of director, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by years of experience of director					F-value
	1 - 5 N = 15	6 - 10 N = 14	11 - 15 N = 20	16 - + N = 26	Sample mean	
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0000
Agricultural programs and policies	0.3	0.3	0.3	0.5	0.5	0.3287
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0000
Farm credit	1.6	7.3	3.3	2.0	3.2	1.8346
Farm risk protection	0.0	0.0	0.2	0.0	0.1	0.7397
Farm law	0.3	7.8	9.1	5.7	7.9	0.3951
Farm leases	7.9	5.1	5.5	4.9	5.7	0.5155
Farm safety	4.0	3.6	3.7	3.8	3.8	0.0190
Marketing	18.9	17.3	22.0	15.6	18.3	0.3567
Labor management	0.0	0.0	0.0	0.0	0.0	0.0000
Farm buildings	0.1	0.0	0.3	0.0	0.1	0.8022
Farmstead planning	0.1	0.0	0.2	0.2	0.1	0.3807
Machinery management	0.7	0.1	0.2	0.2	0.3	0.7994
Planning cropping systems	2.4	0.1	2.3	2.3	1.6	1.2965
Planning livestock systems	3.7	3.6	7.3	4.0	4.7	0.8769
Planning the farm business	44.3	21.0	41.5	31.3	34.7	1.1357
Records and record analysis	27.3	16.8	18.6	16.1	19.2	0.5778
Total	121.5	83.0	113.3	86.6	100.0	0.6585

instruction in planning the farm business (44.3 hours) and in records and record analysis (27.3 hours). Directors with 11 to 15 years of experience provided the most instruction in marketing (22.0 hours).

There were no significant F-values; therefore, the null hypothesis was not rejected. There were no significant differences in the amounts of instruction provided in economics of farm business management in county cooperative extension service programs among directors with varying years of experience.

Data in Table 40 indicate the hours of instruction and calculated F-values for instruction in economics of farm business management provided to youth and adults by county cooperative extension service programs stratified by years of experience of the directors.

Ho_{32}: There were no differences in the amounts of instruction in economics of farm business management, by classification provided by county cooperative extension services with directors with varying years of experience.

The largest number of hours of adult instruction (119.4) was provided by directors with 1 to 5 years of experience. Directors with 11 to 15 years provided the second largest number of hours (113.3). Those directors with 16 and above years of experience ranked third in number of hours (86.6), whereas those directors with 6 to 10 years of experience provided the least number of hours of instruction (83.0). The largest number of hours of youth instruction in farm business management was 3.3 hours provided by those directors with 16 or more years of experience. No significant F-values were observed; thus the null hypothesis was not rejected. There were no significant differences in the amounts of

Table 40. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by classification, and by years of experience of director, 1970-71

Classification	Mean hours of economics of farm business management instruction by years of experience of director					F-value
	1 - 5 N = 15	6 - 10 N = 14	11 - 15 N = 20	16 - + N = 26	Sample mean	
Youth instruction	2.1	1.8	2.0	3.3	2.4	0.3307
Adult instruction	119.4	81.2	111.3	83.3	97.6	0.7108
Total instruction	121.5	83.0	113.3	86.6	100.0	1.7136

instruction in economics of farm business management to youth and adults by county cooperative extension service programs among the directors with varying years of experience.

The mean hours and F-values are recorded in Table 41 for instruction in individual units of economics of farm business management provided by county cooperative extension services classified by graduate credits earned by the director.

Ho_{33}: There were no differences in the amounts of instruction in the various units of economics of farm business management provided in county cooperative extension service programs by directors with varying hours of graduate credits earned.

Those directors who had from 26 to 38 graduate credit hours provided a mean of 130.3 hours of instruction in farm business management.

Table 41. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by instructional unit, and by graduate credits earned by director, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by graduate credits earned by director						
	0 - 12 N = 29	13 - 25 N = 16	26 - 38 N = 8	39 - 51 N = 10	52 - + N = 12	Sample mean	F-value
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0	0.0000
Agricultural programs and policies	0.2	0.4	1.1	0.0	0.4	0.4	2.0508
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0	0.0000
Farm credit	2.0	4.3	3.9	6.4	1.8	3.2	0.8191
Farm risk protection	0.0	0.3	0.0	0.0	0.1	0.1	0.8246
Farm law	9.6	5.4	9.5	5.7	8.1	7.9	0.3028
Farm leases	6.0	3.4	8.0	6.7	5.8	5.7	0.5896
Farm safety	4.2	1.6	7.4	3.3	3.6	3.8	1.7150
Marketing	17.5	16.3	16.4	29.2	14.9	18.3	0.8059
Labor management	0.0	0.0	0.0	0.0	0.0	0.0	0.0000
Farm buildings	0.0	0.0	0.0	0.0	0.4	0.1	1.2001
Farmstead planning	0.1	0.0	0.1	0.4	0.2	0.1	1.3196
Machinery management	0.4	0.0	0.0	0.7	0.1	0.3	0.9785
Planning cropping systems	1.8	2.7	1.0	0.6	1.1	1.6	0.6360
Planning livestock systems	4.4	1.5	6.1	5.5	8.3	4.7	1.3104
Planning the farm business	33.5	31.7	54.1	32.2	30.7	34.7	0.5454
Records and record analysis	21.4	12.6	22.6	20.9	18.7	19.2	0.3126
Total	101.2	80.1	130.3	111.6	94.0	100.0	0.3905

The least hours, 80.1, were provided by those directors who had from 13 to 25 graduate credit hours.

Those directors who had from 26 to 38 graduate credit hours provided the most instruction in planning the farm business, 54.1 hours, and in records and record analysis, 22.6 hours. Those directors who had from 39 to 51 graduate credit hours provided 29.2 hours of instruction in marketing, whereas those directors who had from 0 to 12 graduate credit hours provided 9.6 hours of instruction in farm law.

There were no significant F-values recorded. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction in the various units of economics of farm business management provided in county cooperative extension service programs by directors with varying hours of graduate credit earned.

Table 42 reveals the mean hours and calculated F-values for instruction in economics of farm business management for youth and adults provided by county cooperative extension services stratified by graduate credits earned by the director.

Ho_{34}: There were no differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension services stratified by hours of graduate credits earned by the director.

The directors who had earned from 26 to 38 graduate credits provided a mean of 124.1 hours of adult instruction and 6.1 hours of youth instruction in farm business management. Those directors who had earned from 13 to 25 graduate credits provided the least instruction (79.1 hours) to adults, whereas those directors with 39 to 51 graduate credits

Table 42. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by classification, and by graduate credits earned by director, 1970-71

Classification	Mean hours of economics of farm business management instruction by graduate credits earned by director						
	0-12 N = 29	13-25 N = 16	26-38 N = 8	39-51 N = 10	52- + N = 12	Sample mean	F-value
Youth instruction	3.3	0.9	6.1	0.8	1.0	2.4	2.0063
Adult instruction	97.9	79.1	124.1	110.8	92.9	97.6	0.3415
Total instruction	101.2	80.1	130.3	111.6	94.0	100.0	0.3905

provided the least instruction (0.8 hours) to youth.

There were no significant F-values, therefore, the null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension services stratified by hours of graduate credits earned by the instructor.

The data in Table 43 reflect the mean hours and calculated F-values for instruction provided in the various units of economics of farm business management by county cooperative extension services categorized by the semesters of vocational agriculture completed by the director.

Table 43. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by instructional unit, and by semesters of vocational agriculture completed by director, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by semesters of vocational agriculture completed by director				
	0 - 2 N = 52	3 - 7 N = 15	8 - + N = 8	Sample mean	F-value
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0000
Agricultural programs and policies	0.5	0.1	0.0	0.4	2.0796
Farm appraisal	0.0	0.0	0.0	0.0	0.0000
Farm credit	3.8	2.4	1.5	3.2	0.4091
Farm risk protection	0.0	0.3	0.0	0.1	3.1304*
Farm law	9.5	4.5	4.0	7.9	1.1118
Farm leases	6.0	5.3	4.6	5.7	0.1279
Farm safety	4.0	3.1	3.6	3.8	0.1727
Marketing	17.5	18.2	23.4	18.3	0.2654
Labor management	0.0	0.0	0.0	0.0	0.0000
Farm buildings	0.1	0.1	0.0	0.1	0.0954
Farmstead planning	0.1	0.2	0.0	0.1	0.4866
Machinery management	0.3	0.3	0.3	0.3	0.0216
Planning cropping systems	1.3	2.3	2.9	1.6	0.9341
Planning livestock systems	4.2	4.0	9.6	4.7	1.6566
Planning the farm business	37.8	26.5	29.8	34.7	0.5419
Records and record analysis	21.8	12.2	14.9	19.2	0.8220
Total	106.8	79.5	94.5	100.0	0.4608

*.05 level of significance, 3.13 at 2,72 degrees of freedom.

Ho_{35}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management in county cooperative extension service programs among directors with varying semesters of vocational agriculture completed.

Those directors who had completed 2 or less semesters of vocational agriculture provided the most instruction in farm business management (106.8 hours). Those directors who had completed 8 or more semesters of vocational agriculture provided 94.5 hours of instruction. The directors who had completed from 3 to 7 semesters provided the least instruction (79.5 hours).

The directors who had completed from 0 to 2 semesters of vocational agriculture provided 37.8 hours of instruction in planning the farm business and 21.8 hours of instruction in records and record analysis. The directors who had completed 8 or more semesters of vocational agriculture provided 23.4 hours of instruction in marketing. Furthermore, as the semesters of vocational agriculture completed by the director decreased, the number of hours of instruction in marketing decreased.

The range of 0.0 hours of instruction in farm risk protection by those directors who had completed from 0 to 2, and 8 or more semesters of vocational agriculture to 0.3 hours of instruction by those directors who had completed from 3 to 7 semesters of vocational agriculture yielded an F-value of 3.1304. This F-value was significant at the .05 level of significance. The null hypothesis was rejected. There were differences in the amounts of instruction provided in the various units of economics of farm business management by county cooperative extension services among directors with varying semesters of vocational agriculture

completed. There were significant differences in the total hours of economics of farm business management provided by county cooperative extension services among directors with varying semesters of vocational agriculture completed.

The mean hours and calculated F-values for instruction in economics of farm business management provided to youth and adults by county cooperative extension services grouped by the semesters of vocational agriculture completed by the director are recorded in Table 44.

Ho_{36}: There were no differences in the amounts of instruction in economics of farm business management provided by county cooperative extension services to youth and adults by directors with varying semesters of vocational agriculture completed.

Directors who had completed 0 to 2 semesters of vocational agriculture provided 104.2 hours of instruction to adults and 2.6 hours to youth in farm business management. Directors who had completed 8 or more semesters of vocational agriculture provided 92.3 hours of instruction to adults and 2.3 hours to youth. Directors with 3 to 7 semesters of vocational agriculture provided 77.5 hours of instruction to adults and 2.0 hours to youth.

The single classification analysis of variance yielded no significant F-values; therefore, the null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided by county cooperative extension services to youth and adults by directors with varying semesters of vocational agriculture completed.

Table 44. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by classification, and by semesters of vocational agriculture completed by director, 1970-71

Classification	Mean hours of economics of farm business management instruction by semesters of vocational agriculture completed by director				
	0 - 2 N = 52	3 - 7 N = 15	8 - + N = 8	Sample mean	F-value
Youth instruction	2.6	2.0	2.3	2.4	0.0709
Adult instruction	104.2	77.5	92.3	97.6	0.4580
Total instruction	106.8	79.5	94.5	100.0	0.4608

Table 45 identifies the mean hours and calculated F-values for instruction provided in the various units of economics of farm business management by county cooperative extension services categorized by director's participation in 4-H.

Ho_{37}: There were no differences in the amounts of instruction provided in the various units of economics of farm business management among county cooperative extension service programs whose directors had varying years of participation in 4-H.

The largest amount of instruction in farm business management (106.4 hours) was provided by those directors who had participated 8 or more years in 4-H. Furthermore, those directors provided 27.1 hours of instruction in marketing, and 21.8 hours in records and record analysis.

Table 45. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by instructional unit, and by participation of director in 4-H, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by 4-H participation of director				
	0 - 3 N = 32	4 - 7 N = 25	8 - + N = 18	Sample mean	F-value
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0000
Agricultural programs and policies	0.6	0.3	0.1	0.4	1.5869
Farm appraisal	0.0	0.0	0.0	0.0	0.0000
Farm credit	3.6	1.8	4.5	3.2	0.7024
Farm risk protection	0.0	0.0	0.2	0.1	1.3138
Farm law	8.7	7.6	7.2	7.9	0.0760
Farm leases	5.5	5.8	5.9	5.7	0.0172
Farm safety	3.2	4.0	4.4	3.8	0.3144
Marketing	15.2	15:9	27.1	18.3	2.1412
Labor management	0.0	0.0	0.0	0.0	0.0000
Farm buildings	0.0	0.0	0.3	0.1	2.2800
Farmstead planning	0.2	0.0	0.1	0.1	0.7084
Machinery management	0.1	0.4	0.3	0.3	0.5734
Planning cropping systems	1.2	2.1	1.7	1.6	0.4405
Planning livestock systems	4.3	5.0	5.1	4.7	0.0740
Planning the farm business	39.1	34.2	27.7	34.7	0.4799
Records and record analysis	20.9	15.0	21.8	19.2	0.4298
Total	102.6	92.1	106.4	100.0	0.1290

Directors who had participated 3 or fewer years provided 39.1 hours of instruction in planning the farm business and 8.7 hours in farm law.

The calculated F-values as observed in Table 45 indicated no significant F-values for the various instructional units, or for the mean total hours of instruction. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction provided in the various units of economics of farm business management among county cooperative extension services whose directors had varying years of participation in 4-H.

Data in Table 46 present the mean hours and calculated F-values for instruction in economics of farm business management provided to youth and adults by county cooperative extension services grouped by participation of the director in 4-H.

Ho_{38}: There were no differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension services, by directors with varying years of participation in 4-H.

It was observed that those directors who had participated 8 or more years in 4-H provided the most hours of instruction in farm business management to adults (103.2) and to youth (3.3).

It was further observed that those directors who had participated from 4 to 7 years in 4-H provided the least farm business management instruction (89.0 hours) to adults. Those directors who had participated from 0 to 3 years in 4-H provided the least instruction (1.4 hours) to youth.

Table 46. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by classification, and by participation of director in 4-H, 1970-71

Classification	Mean hours of economics of farm business management instruction by 4-H participation of director				
	0 - 3 N = 32	4 - 7 N = 25	8 - + N = 18	Sample mean	F-value
Youth instruction	1.4	3.1	3.3	2.4	1.0222
Adult instruction	101.2	89.0	103.2	95.6	0.1502
Total instruction	102.6	92.1	106.4	100.0	0.1290

No significant F-values were observed. The null hypothesis was not rejected. There were no significant differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension service programs with directors with varying years of participation in 4-H.

The mean hours and calculated F-values for instruction provided in various units of economics of farm business management by county cooperative extension services stratified by the contacts made by director are recorded in Table 47.

Ho_{39}: There were no differences in the amounts of instruction provided in individual units of the economics of farm business management among county cooperative extension services with varying contacts made by the director.

Table 47. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by instructional unit, and by contacts made by director, 1970-71

Instructional unit	Mean hours of economics of farm business management instruction by contacts made by director					F-value
	0-7999 N = 12	8000-15,999 N = 26	16,000-23,999 N = 17	24,000-+ N = 20	Sample mean	
Agricultural organizations and agencies	0.0	0.0	0.0	0.0	0.0	0.0000
Agricultural programs and policies	0.3	0.3	0.2	0.7	0.4	0.9944
Farm appraisal	0.0	0.0	0.0	0.0	0.0	0.0000
Farm credit	0.8	2.9	3.5	5.0	3.2	0.7503
Farm risk protection	0.0	0.2	0.1	0.0	0.1	0.4941
Farm law	3.9	3.4	4.8	18.9	7.9	6.9025**
Farm leases	5.2	2.6	7.6	8.5	5.7	2.8932*
Farm safety	3.1	1.7	2.9	7.7	3.8	6.3188**
Marketing	8.3	18.0	19.9	23.1	18.3	1.3216
Labor management	0.0	0.0	0.0	0.0	0.0	0.0000
Farm buildings	0.1	0.0	0.0	0.3	0.1	0.8187
Farmstead planning	0.3	0.0	0.0	0.2	0.1	1.7426
Machinery management	1.1	0.2	0.0	0.2	0.3	2.7262
Planning cropping systems	1.4	1.3	0.9	2.8	1.6	0.8897
Planning livestock systems	4.3	4.0	3.1	7.4	4.7	1.0498
Planning the farm business	23.1	28.0	30.3	54.0	34.7	2.4112
Records and record analysis	15.4	9.0	18.4	35.3	19.2	3.9924*
Total	67.3	71.5	91.6	163.8	100.0	4.6515**

*.05 level of significance, 2.74 at 3,71 degrees of freedom.

**.01 level of significance, 4.08 at 3,71 degrees of freedom.

The data revealed that as the number of contacts made by the directors increased, the mean number of hours of instruction in farm business management increased. The hours increased from 67.3 hours when directors made from 0 to 7,999 contacts, to 163.8 hours when 24,000 or more contacts were made. These differences produced an F-value of 4.6515, which was highly significant at the .01 level of significance.

The directors who had made 24,000 or more contacts provided 18.9 hours of instruction in farm law, whereas those directors who had made from 8,000 to 15,999 contacts, provided 3.4 hours of instruction. These differences produced an F-value of 6.9025, which was highly significant at the .01 level of significance.

When a comparison was made of instruction provided in farm safety among the stratifications of contact made, the hours of instruction ranged from 1.7 hours for the 8,000 to 15,999 contact group to 7.7 hours for the 24,000 or more contact group. A highly significant F-value of 6.3188 was observed at the .01 level of significance.

Analysis of variance values of 3.9924 from the records and record analysis and 2.8932 from farm leases analysis produced F-values that were significant at the .05 level of significance. These five significant F-values justified the rejection of the null hypotheses. There were differences in the amounts of instruction provided in the economics of farm business management among county cooperative extension services with varying contacts made by the directors.

Data recorded in Table 48 reveal the mean hours and calculated

Table 48. Mean hours and calculated F-values for instruction in economics of farm business management provided by county cooperative extension services by classification, and by contacts made by director, 1970-71

Classification	Mean hours of economics of farm business management instruction by contacts made by director					F-value
	0-7,999 N = 12	8,000-15,999 N = 26	16,000-23,999 N = 17	24,000 - + N = 20	Sample mean	
Youth instruction	2.0	1.4	1.0	5.2	2.4	2.7040
Adult instruction	65.3	70.1	90.6	158.6	97.6	4.4141**
Total instruction	67.3	71.5	91.6	163.8	100.0	4.6515**

**.01 level of significance, 4.08 at 3,71 degrees of freedom.

F-values for instruction in economics of farm business management provided to youth and adults by county cooperative extension services grouped by the number of contacts made by the directors.

Ho_{40}: There were no differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension services with directors who made varying numbers of contacts.

A highly significant F-value was observed when a single classification analysis of variance test was applied to the number of contacts made by county extension directors in relation to instruction provided in farm business management. The F-value obtained was 4.6515 and was significant at the .01 level of significance. The total hours of instruction ranged from a mean of 67.3 hours to 163.8 hours.

An F-value of 4.4141, highly significant at the .01 level of significance, was observed for the adult contacts made by the directors. The adult classification provided the widest range in hours of instruction, that of 65.3 hours when the number of contacts made by the director were from 0 to 7,999 contacts, to 158.6 hours when the number of contacts made were 24,000 or greater.

The null hypothesis was rejected. There were highly significant differences in the amounts of instruction in economics of farm business management provided to youth and adults by county cooperative extension services with directors who made varying numbers of contacts.

The selected county extension service director variables which contributed significantly to differences in the amounts of instruction provided in economics of farm business management were: total number of contacts made by the director with five significant F-values, and semesters of vocational agriculture completed by the director with one significant F-value.

Post-Secondary Area School Programs

Another objective of the study was to determine the content and emphasis of instruction in economics of farm business management provided in post-secondary area school programs. The post-secondary schools may also be known as area schools, area vocational-technical schools, or community colleges. To accomplish this objective, the post-secondary area school programs were classified into three levels of instruction. The three levels were: (1) Ag-Tech day program, (2) veterans

cooperative farm training program, and (3) other programs.

This division of the study is descriptive of the nine post-secondary schools that provided instruction in economics of farm business management in 1970-71. The summarization by instructional unit, post-secondary area school location, and/or level and classification are recorded on the following four tables.

The hours of instruction in economics of farm business management provided by the nine post-secondary area schools by level and classification of program are presented in Table 49.

The total amount of instruction provided in farm business management was 5,669 hours. The Ag-Tech day program with 3,738 hours of instruction (1,482 hours in the first year, 1,978 hours in the second year, 271 hours in employment supervision, and 7 years in youth group instruction) accounted for 66 percent of the total hours of instruction provided. The veterans cooperative farm training program with 1,931 hours of instruction (766 hours in first year, 633 hours in second year, 412 hours in third year, and 120 hours of on-farm visitation) accounted for 34 percent of the total hours of instruction. No instruction was provided in this subject through adult classes or short courses.

The instructional unit that received the most emphasis (1,228 hours) was records and record analysis and represented nearly 22 percent of the total hours of instruction. The instructional unit of marketing involved 767 hours of instruction and represented 14 percent of the total instructional hours. Involving 664 hours of instruction (nearly 11

Table 49. Hours of instruction in economics of farm business management provided by nine post-secondary area schools by level and classification of program, 1970-71

Instructional unit	Level and Ag-Tech day program			
	First year	Second year	Employ. supr.	Youth groups
Agricultural organizations and agencies	15	149	2	1
Agricultural programs and policies	18	55	2	1
Farm appraisal	45	53	0	0
Farm credit	69	245	15	1
Farm risk protection	58	77	8	1
Farm law	20	211	1	0
Farm leases	44	44	11	0
Farm safety	25	28	18	0
Marketing	207	276	28	2
Labor management	16	22	23	0
Farm buildings	59	68	0	0
Farmstead planning	64	88	0	0
Machinery management	157	63	17	0
Planning cropping systems	132	39	34	0
Planning livestock systems	72	76	34	0
Planning the farm business	130	207	43	0
Records and record analysis	351	277	35	1
Total	1482	1978	271	7

classification of program						
Veterans cooperative farm training				Other programs		
First year	Second year	Third year	On-farm visitation	Adult classes	Short courses	Total
21	3	75	0	0	0	266
15	51	75	0	0	0	217
10	18	6	0	0	0	132
116	30	6	0	0	0	482
61	1	1	0	0	0	207
15	3	3	0	0	0	253
19	3	3	0	0	0	124
3	3	3	0	0	0	80
23	72	159	0	0	0	767
3	3	3	0	0	0	70
6	6	6	0	0	0	145
3	3	3	0	0	0	161
3	3	3	0	0	0	246
56	68	20	0	0	0	349
24	56	16	0	0	0	278
56	100	20	108	0	0	664
332	210	10	12	0	0	1228
766	633	412	120	0	0	5669

percent of the total instruction) was the instructional unit on planning the farm business.

Instructional units which represented from 6 to 10 percent of the instructional program were farm credit, 482 hours, and planning the cropping system, 349 hours.

Those instructional units which represented from 1 to 5 percent of the instructional program were: planning livestock systems, 278 hours; agricultural organizations and agencies, 266 hours; farm law, 253 hours; machinery management, 246 hours; agricultural programs and policies, 217 hours; farm risk protection, 207 hours; farmstead planning, 161 hours; farm buildings, 145 hours; farm appraisal, 132 hours; farm leases, 124 hours; farm safety, 80 hours; and labor management, 70 hours.

The instructional units most emphasized in terms of total hours of instruction in the Ag-Tech day program included: (1) records and record analysis, 663 hours; (2) marketing, 513 hours; (3) planning the farm business, 380 hours; (4) farm credit, 330 hours; (5) machinery management, 237 hours; (6) farm law, 232 hours; and (7) planning cropping systems, 205 hours.

The units most emphasized in terms of total hours of instruction in the veteran cooperative farm training program included: (1) records and record analysis, 564 hours; (2) planning the farm business, 284 hours; (3) marketing, 254 hours; (4) farm credit, 152 hours; (5) planning the cropping system, 144 hours; and (6) agricultural programs and policies, 141 hours.

The hours of instruction are recorded in Table 50 by level and classification for each of the post-secondary area schools providing instructional programs in economics of farm business management during 1970-71. The Sheldon post-secondary area school provided the most total hours of instruction, 1,286 hours (694 hours in the Ag-Tech day program and 592 hours in the veterans cooperative farm training program). Calmar provided 948 total hours of farm business management instruction (363 hours in the Ag-Tech program and 582 hours in the veterans program, of which 120 hours involved on-farm visitation instruction). Emmetsburg provided 674 hours of instruction (518 hours was in the Ag-Tech program and 156 hours in the veterans program).

Mason City post-secondary area school offered 277 hours of Ag-Tech day program instruction and 372 hours of veterans cooperative farm training instruction; equivalent to 649 hours of total farm business management instruction. Of the 484 hours of total instruction at Council Bluffs, 312 hours was provided in their Ag-Tech program and 172 hours in their veterans program. The least amount of instruction provided was at Ankeny with 136 total hours of farm business management instruction, of which 79 hours was in the 2nd year Ag-Tech program and 57 hours was in the 2nd year veterans program.

The post-secondary area schools of Cedar Rapids, Muscatine, and Waterloo provided all their farm business management instruction in the Ag-Tech day program. The hours provided by these post-secondary area schools were: Cedar Rapids--634 hours, of which 136 hours was in employment supervision; Muscatine--530 hours, of which 45 hours was in

Table 50. Hours of instruction in economics of farm business management provided by the nine post-secondary area schools by area school, by level and classification of program, 1970-71

Post-secondary area school location	Level and Ag-Tech day program			
	First year	Second year	Employ. supr.	Youth groups
Calmar	102	264	0	0
Mason City	127	150	0	0
Emmetsburg	300	218	0	0
Sheldon	214	480	0	0
Waterloo	62	266	0	0
Muscatine	257	221	45	7
Cedar Rapids	198	300	136	0
Ankeny	0	79	0	0
Council Bluffs	222	0	90	0
Total	1482	1978	271	7

classification of program						
Veterans cooperative farm training				Other programs		
First year	Second year	Third year	On-farm visitation	Adult classes	Short courses	Total
18	444	0	120	0	0	948
124	124	124	0	0	0	649
156	0	0	0	0	0	674
296	8	288	0	0	0	1286
0	0	0	0	0	0	328
0	0	0	0	0	0	530
0	0	0	0	0	0	634
0	57	0	0	0	0	136
172	0	0	0	0	0	484
766	633	412	120	0	0	5669

employment supervision and 7 hours in youth group instruction; and Waterloo--328 hours.

Information in Table 51 reveals the hours of instruction provided by each of the nine post-secondary area schools in the various units of economics of farm business management. The Sheldon post-secondary area school offered the largest total number of hours on instruction with 1,286 hours. Calmar was second with 948 hours. Ranking third was Emmetsburg with 674 hours, fourth was Mason City with 649 hours and following closely in fifth was Cedar Rapids with 634 hours. Muscatine ranked sixth with 530 hours of farm business management instruction. Council Bluffs with 484 hours ranked seventh. Waterloo ranked eighth with 328 instructional hours. Ankeny provided the least number of farm business management instructional hours (136) thus ranking ninth.

Cedar Rapids post-secondary area school offered 90 hours of instruction in marketing, 84 hours in machinery management, and 48 hours in each, farm credit, planning cropping systems, planning livestock systems, planning the farm business, and records and record analysis. The major emphasis in the Mason City area school was marketing with 117 hours followed by planning cropping systems and planning the farm business with 75 hours each, then planning livestock systems with 63 hours.

The major emphasis in the Waterloo post-secondary area school was planning the farm business with 80 hours of instruction; followed by farm credit with 60 hours; farm law with 50 hours; and farm appraisal, and records and record analysis with 30 hours each. All 136 hours of instruction at the Ankeny area school was provided in the instructional

Table 51. Hours of instruction in economics of farm business management provided by the nine post-secondary area schools by instructional unit, and by school, 1970-71

Instructional unit	Post-secondary area		
	Calmar	Mason City	Emmets-burg
Agricultural organizations and agencies	54	19	20
Agricultural programs and policies	48	24	20
Farm appraisal	12	28	30
Farm credit	24	48	120
Farm risk protection	0	13	0
Farm law	54	19	30
Farm leases	0	24	30
Farm safety	0	19	10
Marketing	90	117	42
Labor management	0	19	0
Farm buildings	36	28	0
Farmstead planning	0	14	40
Machinery management	0	19	40
Planning cropping systems	40	75	50
Planning livestock systems	76	63	10
Planning the farm business	254	75	20
Records and record analysis	260	45	212
Total	948	649	674

school location						Total
Sheldon	Waterloo	Musca-tine	Cedar Rapids	Ankeny	Council Bluffs	
126	2	27	18	0	0	266
85	0	26	6	0	8	217
16	30	4	12	0	0	132
82	60	38	48	0	62	482
106	20	38	18	0	12	207
42	50	22	36	0	0	253
24	16	4	22	0	4	124
0	0	15	36	0	0	80
207	0	77	90	136	8	767
0	0	15	36	0	0	70
48	10	11	12	0	0	145
54	10	1	24	0	18	161
48	0	35	84	0	20	246
48	10	22	48	0	56	349
0	10	23	48	0	48	278
106	80	7	48	0	74	664
294	30	165	48	0	174	1228
1286	328	530	634	136	484	5669

unit of marketing.

The post-secondary area schools of Sheldon, Calmar, Emmetsburg, Council Bluffs, and Muscatine provided largest amounts of instruction in records and record analysis with 294, 260, 212, 174, and 165 hours respectively. Marketing was the second most emphasized instructional unit by Sheldon with 207 hours, Calmar with 90 hours, and Muscatine with 77 hours, whereas the second most emphasized unit of instruction was farm credit with 120 hours at Emmetsburg, and planning the farm business with 74 hours at Council Bluffs.

The instructional units of farm safety and labor management were emphasized the least with only 80 hours and 70 hours of total instruction provided respectively among the nine area schools.

Data in Table 52 identify the hours of instruction provided in the various units of economics of farm business management by the nine post-secondary area schools in the first- and second-year Ag-Tech day program. The emphasis during the first year of the Cedar Rapids post-secondary area school program included 36 hours of instruction in each of the following units: marketing, machinery management, planning cropping systems, planning livestock systems, and records and record analysis.

During the second year, an additional 36 hours of instruction were provided in marketing and machinery management. Thirty-six hours of instruction was also provided in each, farm credit, farm law, and planning the farm business.

The Sheldon area school provided 48 hours of instruction in farm

Table 52. Hours of instruction in economics of farm business management provided by the nine post-secondary area schools in the Ag-Tech program, by instructional unit, and by level of program and school, 1970-71

Instructional unit	Post-secondary area		
	Calmar		
	1st year	2nd year	Total
1. Agricultural organizations and agencies	0	36	36
2. Agricultural programs and policies	0	0	0
3. Farm appraisal	0	0	0
4. Farm credit	0	0	0
5. Farm risk protection	0	0	0
6. Farm law	18	36	54
7. Farm leases	0	0	0
8. Farm safety	0	0	0
9. Marketing	30	60	90
10. Labor management	0	0	0
11. Farm buildings	0	36	36
12. Farmstead planning	0	0	0
13. Machinery management	0	0	0
14. Planning cropping systems	0	0	0
15. Planning livestock systems	0	36	36
16. Planning the farm business	6	60	66
17. Records and record analysis	48	0	48
18. Total	102	264	366

school location								
Mason City			Emmetsburg			Sheldon		
1st year	2nd year	Total	1st year	2nd year	Total	1st year	2nd year	Total
10	0	10	0	20	20	0	54	54
0	15	15	0	20	20	9	0	9
0	10	10	30	0	30	12	0	12
0	30	30	0	36	36	16	54	70
0	10	10	0	0	0	16	36	46
0	10	10	0	30	30	0	30	30
0	15	15	30	0	30	12	0	12
10	0	10	0	10	10	0	0	0
72	0	72	0	42	42	9	54	63
10	0	10	0	0	0	0	0	0
10	0	10	0	0	0	48	0	48
5	0	5	40	0	40	0	54	54
10	0	10	40	0	40	48	0	48
0	15	15	40	10	50	20	0	20
0	15	15	0	10	10	0	0	0
0	15	15	0	20	20	24	54	78
0	15	15	120	20	140	0	150	150
127	150	277	300	218	518	214	480	694

Table 52 (Continued)

Instructional unit	Post-secondary area								
	Waterloo			Muscatine			Cedar Rapids		
	1st year	2nd year	Total	1st year	2nd year	Total	1st year	2nd year	Total
1.	2	0	2	3	21	24	0	18	18
2.	0	0	0	3	20	23	6	0	6
3.	0	30	30	3	1	4	0	12	12
4.	0	60	60	5	29	34	0	36	36
5.	0	20	20	30	5	35	0	12	12
6.	0	50	50	2	19	21	0	36	36
7.	0	16	16	2	1	3	0	12	12
8.	0	0	0	3	6	9	12	12	24
9.	0	0	0	60	5	65	36	36	72
10.	0	0	0	6	4	10	0	18	18
11.	0	10	10	1	10	11	0	12	12
12.	0	10	10	1	0	1	0	24	24
13.	0	0	0	3	27	30	36	36	72
14.	0	10	10	16	4	20	36	0	36
15.	0	10	10	16	5	21	36	0	36
16.	60	20	80	4	2	6	0	36	36
17.	0	30	30	99	62	161	36	0	36
18.	62	266	328	257	221	478	198	300	498

school location						
Ankeny			Council Bluffs			
1st year	2nd year	Total	1st year	2nd year	Total	Total
0	0	0	0	0	0	164
0	0	0	0	0	0	73
0	0	0	0	0	0	98
0	0	0	48	0	48	314
0	0	0	12	0	12	135
0	0	0	0	0	0	231
0	0	0	0	0	0	88
0	0	0	0	0	0	53
0	79	79	0	0	0	483
0	0	0	0	0	0	38
0	0	0	0	0	0	127
0	0	0	18	0	18	152
0	0	0	20	0	20	220
0	0	0	20	0	20	171
0	0	0	20	0	20	148
0	0	0	36	0	36	337
0	0	0	48	0	48	628
0	79	79	222	0	222	3460

buildings and machinery management in the first-year Ag-Tech program. In contrast, Sheldon provided in the second-year program, 150 hours of instruction in records and record analysis and 54 hours of instruction in each, agricultural organizations and agencies, farm credit, marketing, farmstead planning, and planning the farm business.

Ankeny offered 79 hours of instruction in marketing during the second-year Ag-Tech program, whereas no instruction was provided in the first-year program. Council Bluffs placed most emphasis (48 hours each) on instruction in farm credit, and records and record analysis, whereas no instruction was provided in the second-year Ag-Tech day program.

The post-secondary area school at Muscatine provided 99 hours of instruction in records and record analysis during the first-year Ag-Tech program, and 62 hours during the second-year program. In addition, marketing with 60 hours and farm risk protection with 30 hours were emphasized during the first year.

Waterloo provided 60 hours of instruction in planning the farm business in the first-year Ag-Tech program and emphasized farm credit (60 hours) followed by farm law (50 hours) in the second-year program. Records and record analysis instruction totaled 120 hours in the first year of the Emmetsburg post-secondary area school program, whereas marketing instruction totaled 42 hours in the second-year program.

Marketing instruction totaled 72 hours at Mason City during the first-year program. Farm credit, with 30 hours provided, was most emphasized in the second-year program. The Calmar post-secondary area school allocated 48 hours of instruction in records and record analysis

in the first-year Ag-Tech day program followed by 30 hours in marketing. During the second year, Calmar allocated an additional 60 hours of instruction to marketing and offered 60 additional hours of instruction in planning the farm business.

DISCUSSION AND IMPLICATIONS

Since randomization was used to select the vocational agriculture departments and counties, the data were analyzed using mean hours of instruction as the basic observation. There are some inherent dangers in using means as the basic observation. The mean is a reliable statistic in most cases because it uses all of the available information in a set of data. However, the mean is sensitive and may yield unrealistic results when extremes are encountered.

As the total population was used for the post-secondary area schools, the analysis of data conducted involves a description in terms of hours of instruction.

The number of farms (36) in Iowa decreased from 174,707 in 1959 to 140,354 in 1969, whereas the average farm size (36) has increased from 193.6 acres in 1959 to 239.1 acres in 1969. From 1959 to 1969, the value of Iowa farms (36) increased from $8,586,849,050 to $13,150,361,081.

Furthermore, Iowa's contribution to United States production in 1970 was as follows:

> . . . hogs (liveweight), 23 percent; corn, 21 percent; fed cattle marketed (number), 18 percent; popcorn, 17 percent; soybeans, 16 percent; oats, 10 percent; cattle and calves (liveweight), 7 percent; turkeys (liveweight), 6 percent; hay, 5 percent; sheep and lambs (liveweight), 5 percent; timothy seed, 4 percent; milk, 4 percent; and chickens (liveweight), 3 percent (13, p. 7).

It could be said that the above commodities are not directly related to the topic of this study, economics of farm business management. However, Nebraska's Curriculum Guide suggests:

> Farm management pertains to the use of resources in the

> most efficient way. This course deals with all the resources on the farm or in an agricultural business (land, labor, capital, and management) in order to help the student realize a more efficient way of utilizing available resources to obtain the maximum profits.
>
> Some of the units of instruction covered will include . . . crop and livestock management (22, p. 54).

The success of Iowa's contribution through crops and livestock to the agricultural production of United States is dependent on the knowledge and managerial skill of the farmers associated with the following farm business management units: (1) agricultural organizations and agencies, (2) agricultural programs and policies, (3) farm appraisal, (4) farm credit, (5) farm risk protection, (6) farm law, (7) farm leases, (8) farm safety, (9) marketing, (10) labor management, (11) farm buildings, (12) farmstead planning, (13) machinery management, (14) planning cropping systems, (15) planning livestock systems, (16) planning the farm business, and (17) records and record analysis.

The local vocational agricultural programs provided a mean of 197.4 hours of instruction in economics of farm business management. The total amount of instruction provided in the 75 vocational agriculture departments involved in the study was 14,805 hours.

The county cooperative extension service programs provided a mean of 100.0 hours of instruction in economics of farm business management. The total amount of instruction provided in the 75 counties involved in the study was 7,500 hours.

The nine post-secondary area school programs provided a total of 5,669 hours of instruction in farm business management, of which 3,460 hours of instruction was provided in the Ag-Tech day program.

What relationships exist among the three institutional programs in respect to total projected hours of instruction provided by each, and the percentage of instruction in each individual unit provided by each institution? Table 53 provides a summary of institutional programs in economics of farm business management provided by Iowa's public supported institutions by hours, and by percentages within institutional programs.

The projected total hours of instruction provided by 231 vocational agriculture departments was 45,599.4 hours, whereas the projected total hours of instruction provided by 100 county cooperative extension service programs was 10,000 hours. Since the hours of instruction provided by post-secondary area school programs represented the total state program, the 5,669 hours reflect total hours of instruction provided.

The combined projected total hours of instruction provided by Iowa's public supported institutions in economics of farm business management for Iowa's youth and adults was 61,268.4 hours. Of the total projected hours, the vocational agriculture programs provided 74.4 percent of the total, the county cooperative extension service programs provided 16.3 percent of the total, and the post-secondary area school programs provided 9.3 percent.

The instructional unit that received most emphasis by an institution was planning the farm business with 34.7 percent of total time by county cooperative extension service programs, whereas the most emphasis provided by the other two institutions was in records and record analysis with 19.6 percent of total instructional hours by vocational agriculture

Table 53. Summary of instructional programs in economics of farm business management provided by Iowa's public supported institutions by hours, and by percentage within institutional program, 1970-71

Instructional Unit	Hours and percentage	
	Vocational agriculture department programs	
	Total hours N = 231	Percentage of total hours
Agricultural organizations and agencies	1,362.9	3.0
Agricultural programs and policies	1,570.8	3.4
Farm appraisal	1,963.5	4.3
Farm credit	3,395.7	7.4
Farm risk protection	1,293.6	2.8
Farm law	1,455.3	3.2
Farm leases	1,801.8	4.0
Farm safety	1,686.3	3.7
Marketing	3,973.2	8.7
Labor management	947.1	2.1
Farm buildings	1,986.6	4.4
Farmstead planning	1,824.9	4.0
Machinery management	3,950.1	8.6
Planning cropping systems	3,072.3	6.7
Planning livestock systems	3,118.5	6.8
Planning the farm business	3,280.2	7.2
Records and record analysis	8,939.7	19.6
Total	45,599.4	100.0

by institution

County cooperative extension service programs		Post-secondary area school programs			
		Total program		Ag-Tech program	
Total hours N = 100	Percentage of total hours	Total hours N = 9	Percentage of total hours	Total hours N = 9	Percentage of total hours
00	0.0	266	4.7	164	4.7
40	0.4	217	3.8	73	2.1
00	0.0	132	2.3	98	2.8
320	3.2	482	8.5	314	9.1
10	0.1	207	3.7	135	3.9
790	7.9	253	4.5	231	6.7
570	5.7	124	2.2	88	2.5
380	3.8	80	1.4	53	1.5
1,830	18.3	767	13.5	483	14.0
00	0.0	70	1.2	38	1.1
10	0.1	145	2.6	127	3.7
10	0.1	161	2.8	152	4.4
30	0.3	246	4.3	220	6.4
160	16.0	349	6.2	171	4.9
470	4.7	278	4.9	148	4.3
3,470	34.7	664	11.7	337	9.7
1,920	19.2	1,228	21.7	628	18.2
10,000	100.0	5,669	100.0	3,460	100.0

departments, and 21.7 percent by post-secondary area school programs of which 18.2 percent was within the Ag-Tech day program.

The second most emphasized unit was records and record analysis by county cooperative extension service programs with 19.2 percent of total instruction provided, whereas marketing was the second most emphasized unit among vocational agriculture departments with 8.7 percent, and with post-secondary area school programs with 13.5 percent of total instruction time, and 14.0 percent of the total hours provided in the Ag-Tech day program.

Ranking third in total percentage of instruction provided was marketing by county cooperative extension services with 18.3 percent; planning the farm business by the post-secondary area schools with 11.7 percent of total program, and 9.7 percent in the Ag-Tech day program; and machinery management by the vocational agriculture departments with 8.6 percent of total instruction.

The least emphasis provided in economics of farm business management was in the county cooperative extension service programs with no instruction provided in agricultural organizations and agencies, and in farm appraisal, whereas labor management was emphasized the least by post-secondary area schools with 1.2 percent of the total program, and 1.1 percent in the Ag-Tech day program. The vocational agriculture departments provided only 2.1 hours of instruction in labor management.

It is most difficult to determine the number of youth and adults served in the three institutional programs in farm business management. Enrollment in vocational agriculture is reflective of those youth

enrolled in Vo-Ag I, II, III, and IV on a yearly basis. The number of young and adult farmers enrolled in classes was reported by the instructors. During the period of this study, 11,892 secondary students were enrolled in the vo-ag program, 765 were enrolled in the young farmer program, and 15,934 were enrolled in the adult program.

The county cooperative extension service records the youth and adult served in terms of contacts. Each time an individual attended a meeting, visited the county cooperative extension service office, or was visited by the county extension director, it was recorded as a contact made. The number of contacts made in farm business management were 6,099, whereas the total contacts made by county cooperative extension directors in 1970-71 as reported by SEMIS were 2,094,270 through workshops, field days, meetings and small group, personal contacts, and visitation methods.

Enrollments in the post-secondary area school institutions are based on participation in the program either for an entire year or for the duration of the program. The 12 post-secondary area schools were serving 1,219 Ag-Tech day class students and veterans cooperative farm training class enrollees during 1970-71 with instruction.

The estimated number of youth and adults who were provided instruction in economics of farm business management in 1970-71 through vocational agriculture department programs, county cooperative extension service programs, and nine post-secondary area school programs were 24,022.

It was assumed that all day students, that 50 percent of the young

and adult farmers enrolled in local vocational agriculture departments, that 50 percent of the number of contacts made by county cooperative extension directors in farm business management, and that 60 percent of those enrolled in Ag-Tech, veterans cooperative farm training and other classes were provided instruction in farm business management.

The wide range in mean number of hours of economics of farm business management instruction provided among economic areas should be given consideration in agricultural education program development. The small number of hours of instruction provided in the eastern livestock area (149.6 hours) in contrast with the number of hours of instruction provided in the northeast dairy area (244.5 hours) may have been caused by a number of factors.

The eastern livestock area specializes in livestock production; thus providing major emphasis in livestock may fail to provide the instructional emphasis in farm business management. In 14 of the 17 identified units of instruction, the eastern livestock area provided the least amount of instruction, and in the remaining three units, the amounts of instruction ranks second smallest. Since this area has a sizable number of industrial complexes, it is probable that many farm operators are employed off-farm and supplement their farm income. Management of the farm may not be the key to family welfare as in the northeast dairy area.

The northeast dairy area has the larger concentration of farms with fewer acres and larger families; thus the need for farm business management may be more necessary for economic survival. The instructional unit

in the northeast dairy area that received most emphasis was records and record analysis (50.6 hours, or 20 percent of the total northeast dairy area instruction).

Oklahoma (25) recommended that farm business management be taught at the Vo-Ag IV level and that 120 periods be provided for such instruction, and an additional 60 periods may be used in teaching this subject, or in meeting other instructional needs. Pumper (26) observed in Wisconsin that the mean number of periods allocated to farm business management were 174.5 periods. Bundy (5) suggested that a range of from 18 to 22 percent (119 to 146 days) in a four year program in high school vocational agriculture be allocated to farm management.

The mean hours of instruction provided to Vo-Ag I, II, III, and IV secondary school students was 126.2 hours. The most instruction was provided in the southern pasture area with a mean of 138.3 hours. Following closely was the cash grain area with 133.7 hours, and the western livestock area with 130.7 hours. The northeast dairy area provided 124.9 hours, whereas the least amount of instruction provided for secondary students was the eastern livestock area with a mean of 103.3 hours. Four of the economic areas were within the recommendations by Bundy and Oklahoma. All five areas were below the findings of Wisconsin.

The majority of the mean hours of instruction provided in each of the identified units were similar to, or were within the boundaries suggested by Bundy (5).

Small group, personal contact, and visitation methods were used in providing 28.7 hours of instruction in farm business management.

Vocational agriculture instructors provided nearly one hour of instruction through small group, personal contact, and visitation methods for each four hours of secondary school classroom instruction. It has long been suggested the importance of this method of instruction as it relates to the success of a program in vocational agriculture.

The young and adult farmer classroom programs provided consists of about 12 meetings with a duration of about 2 hours each, or for a total of 24 hours of instructional time. A mean of 6.0 hours of this instruction was provided in farm business management.

Another important aspect of young-adult farmer instruction is that provided by small group, personal contact, and visitation methods. These methods were used in providing a mean of 32.6 hours of instruction with a range of 13.8 hours provided in the southern pasture area to 67.7 hours provided in the northeast dairy area. The latter area also provided the most classroom instruction for young-adults (9.7 hours). Vocational agriculture instructors provided nearly 5.5 hours of instruction through small group, personal contact, and visitation methods for each hour of classroom instruction provided at the young and adult farmer level. This importance further supports the need for further study in this method of instruction as it relates to the instructional programs in Iowa's vocational agriculture departments.

Instruction in farm business management through the FFA (3.6 hours) represented only 1.8 percent of the total vocational agriculture instructional program in this subject. This would suggest that personal and leadership development is provided through FFA rather than subject

matter content.

No instruction was provided for below 9th grade students (exploratory agriculture) in economics of farm business management; thus suggesting that comprehensive instruction in the subject may need the maturity of junior and senior level students. The need of prerequisites to better comprehend the farm business management instruction provides another aspect for consideration.

County cooperative extension service programs are available in all counties in Iowa and provide instruction to many youth and adults who do not have instruction available through a secondary school or post-secondary institution, or have access to young-adult farmer educational programs. It must be noted that county cooperative extension services do provide additional instruction to those youth and adults who are enrolled in other institutional programs through activities such as 4-H programs, field days, and workshops, and by personal contacts.

The majority of the instruction provided by the county cooperative extension service programs is not the formal type of instruction that occurs in secondary and post-secondary schools. It is usually provided in four or fewer meetings and/or provided through personal contact.

A mean of 100.0 hours of instruction was provided in economics of farm business management by extension personnel; of which 97.6 hours of instruction was provided to adults and only 2.4 percent was provided to youth.

Directors in the cash grain area provided the most emphasis with 111.2 hours, whereas the southern pasture area provided the least

instruction with 91.2 hours. The differences that existed among the areas may have been due to several factors. The more fertile soil, with concentrated crop production in the cash grain area would require instruction in crop selection, tillage practices, herbicides, insecticides, harvesting, storage, and marketing.

The southern pasture area is not noted for soil of high fertility; therefore, the basic production is pasture and livestock. Topography of the land suggest the ways the land can be utilized. The rolling plains of the cash grain area as compared to the more rugged hills of the southern pasture area provide a striking difference.

It should be noted that as the total number of contacts made by the director increased, the hours of instruction provided in farm business management increased. The importance of personal contact as it relates to instruction by the county cooperative extension service is just as vital to program emphasis in this public supported institution as it was in vocational agriculture department programs.

The post-secondary programs provided only 9.3 percent of the total instruction provided in economics of farm business management by the state supported institutions in Iowa in 1970-71. The area school programs are relatively new in Iowa and are experiencing growing pains; therefore, this researcher would predict that the amounts of instruction provided by these institutions will increase annually as these institutions assume their role in meeting the vocational education needs of Iowa.

Six programs were offered in agriculture by the University of Nebraska School of Technical Agriculture (23) during the 1970-72 period.

The six programs were 20 months in length and each provided for instruction in farm business management. A total of 2,400 hours of classroom and laboratory instruction were provided on campus with one three-month period of on-job training.

Students enrolled in the Ag-Tech day program, in Iowa, are provided from 600 to 1,200 hours of instruction each year. The instructional programs vary from less than one year in length to three years in length with the majority of the technical programs two years in length. The veterans cooperative farm training program are three years in length with 12 hours of instruction provided per week for 44 weeks each year.

In 1970-71 there were 27 separate programs in agricultural education offered by Iowa area schools. Nine area schools provided instruction in farm business management for students enrolled in Ag-Tech day programs and six of the area schools provided farm business management instruction to veterans enrolled in the veterans farm training program.

The vocational agriculture instructors in secondary schools should evaluate the content of their curriculums. The 18 to 22 percent of total instruction time recommended by Bundy (5) in the 1960's for a total vocational agriculture program does not provide for new subject matter that has been suggested in natural resources occupations. It also does not contain the full impact of the impetus of off-farm instruction resulting from the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968.

The necessity of comprehensive one semester courses and independent

study units may be the result of those reflected changes. Likewise, as vocational educators retool their programs to include the cluster concept of career education, therein creates a necessity of reassessment of curriculum content and emphasis.

As the roles of educators expand in the various institutions, so do the needs for additional personnel properly trained to meet the expanded needs. There exists today a greater need than ever before for multi-instructor vocational agriculture departments, for further expansion in county cooperative extension service programs, and for personnel to meet the rapidly expanding role of post-secondary area schools.

Post-secondary area schools need to evaluate their programs with respect to programs provided in the Ag-Tech program. An examination of the emphasis provided in present programs should be taken into consideration as new programs are implemented; however, coordination among post-secondary area schools is needed to prevent the overlapping or unnecessary duplication of instructional programs.

No instruction was provided to adults in the post-secondary area schools in farm business management except through training or retraining in the Ag-Tech program or through veterans cooperative farm training. Area schools should assess this area of education and determine where they can best serve the needs of young and adult farmers.

Among the three institutions, records and record analysis consistently was identified as the unit provided most instructional emphasis. There is a need for education in this area. Such groups as the Iowa Farm Business Association can provide technical assistance to

institutions in providing such training.

Of the 140,354 farms in Iowa (36), 71,266 are fully owned by the operator, 35,339 are partly owned by the operator, and 33,749 are farmed by tenants. There exists a need to provide these groups of individuals, training in the field of production agriculture of which farm business management is included. It is imperative that the three institutions determine the clientele in their respective locations and develop curriculums that will provide instruction to this important segment of Iowa's economy.

Teacher education programs for undergraduates and graduates enrolled in agricultural education should (1) be expanded to include more emphasis in methods of teaching, (2) stress the importance of small group, personal contact, and visitation methods, and (3) extend the curriculum to include new and expanding programs in agricultural education curricula; especially programs related to farm business management.

Teacher education programs should include mini-classes, workshops (on- and off-campus), and other in-service programs to update the instructors' techniques of teaching, increase knowledge, and identify those abilities and understandings necessary for farm business management.

There is need for development of instructional media and materials related to farm business management to assist instructors in providing their instructional programs.

Personnel in the Department of Public Instruction should provide in-service training, workshops, and instructional materials for instructors in secondary and post-secondary institutions especially designed for improvement of the effectiveness of instruction in the economics of

farm business management.

A need existed to study the programs in economics of farm business management in Iowa to ascertain the role of the programs offered and assess the need for curriculum revision. The findings of this study provide information that should be of much assistance to those concerned with the education of Iowa's rural youth and adults.

The results of this investigation should be made available to vocational agriculture and post-secondary instructors, teacher educators, state supervisors of agricultural education, secondary and post-secondary area school curriculum planners, county cooperative extension directors, multi-county specialists, state extension personnel, and others to aid them in developing meaningful and useful educational programs that will meet the needs of tomorrow's farmers and ranchers.

SUMMARY

The general purpose of this study was to determine content and emphasis placed on identified units of instruction in the economics of farm business management by personnel in public supported institutions of Iowa during the period of July 1, 1970 through June 30, 1971.

This study was an in-depth analysis of a larger study entitled, "Education Programs to Meet the Manpower Needs of Iowa Agriculture," and was partially funded by a research grant, Project 1879, obtained from the Iowa Agricultural and Home Economics Experiment Station, Iowa State University.

A list of schools offering vocational agriculture was obtained from the Department of Agricultural Education and a directory of county cooperative extension directors was obtained from the Iowa Cooperative Extension Service both at Iowa State University. A directory of post-secondary agricultural education programs and personnel was obtained from the State Department of Public Instruction.

The five economic areas in Iowa were divided into three substrata. From the population within the substrata, five vocational agriculture departments and five counties were randomly selected. A sample of 75 vocational agriculture departments, a sample of 75 counties, and all post-secondary area schools that provided farm business management programs were included in this study.

This researcher identified 17 units in economics of farm business management for study. The units included: (1) agricultural organizations

and agencies, (2) agricultural programs and policies, (3) farm appraisal, (4) farm credit, (5) farm risk protection, (6) farm law, (7) farm leases, (8) farm safety, (9) marketing, (10) labor management, (11) farm buildings, (12) farmstead planning, (13) machinery management, (14) planning cropping systems, (15) planning livestock systems, (16) planning the farm business, and (17) records and record analysis.

The vocational agriculture instructors assembled at one of six locations. Each was administered a survey form on which the content and emphasis of his instructional program was recorded. Each participant also completed a school and personal characteristic form. The content and emphasis of county cooperative extension services instructional programs were obtained from the State Extension Management Information System (SEMIS). The county and director characteristics were obtained by mail. The area school survey forms were mailed to the department head for distribution to appropriate personnel. One of the project staff researchers visited each area school to assist with completion of the survey forms.

The data gathered were coded and key punched on data processing cards. The analyses of data conducted used the mean hours of instruction as the basic observation since the vocational agriculture and the county cooperative extension service programs were randomly selected by economic area. The treatment effects were then tested against variations among the mean hours of instruction.

The department and instructor variables selected for study were: (1) years of experience, (2) graduate credits earned, (3) vocational

agriculture enrollment, (4) semesters of vocational agriculture completed, (5) participation in 4-H, (6) young and adult farmer class attendance, and (7) number of supervisory visits.

The county extension director variables selected for study were: (1) years of experience, (2) graduate credits earned, (3) semesters of vocational agriculture completed, (4) participation in 4-H, and (5) number of instructional contacts.

The mean hours of instruction provided by vocational agriculture instructors in economics of farm business management was 197.4 hours. The economic area in which the most instruction was provided was the northeast dairy area with a mean of 244.5 hours. The second highest economic area was the western livestock area with 218.8 hours. The cash grain area ranked third with 198.8 hours. The southern pasture area ranked fourth with 175.5 hours. Providing the least instruction were the departments in the eastern livestock area with a mean of 149.6 hours.

The five units that were provided the most hours of instruction were: (1) records and record analysis, 38.7 hours; (2) marketing, 17.2 hours; (3) machinery management, 17.1 hours; (4) farm credit, 14.7 hours; and (5) planning the farm business, 14.2 hours. The five units that were provided the least hours of instruction were: (1) agricultural programs and policies, 6.8 hours; (2) farm law, 6.3 hours; (3) agricultural organizations and agencies, 5.9 hours; (4) farm risk protection, 5.6 hours; and (5) labor management, 4.1 hours.

Hours of instruction provided in records and record analysis

ranged from a low of 27.6 hours in the southern pasture area to a high of 50.6 hours in the northeast dairy area. Ranges in various instructional units among economic areas include: (1) planning the farm business, eastern livestock area (10.1 hours) to northeast dairy area (26.3 hours); (2) marketing, eastern livestock area (11.8 hours) to western livestock area (24.0 hours); (3) farm credit, eastern livestock area (9.9 hours) to western livestock area (20.6 hours); and (4) machinery management, eastern livestock and southern pasture areas (14.1 hours) to northeast dairy area (24.5 hours).

The day school program (154.9 hours) involved 78.6 percent of the total hours of instruction provided in economics of farm business management. Instruction provided through small group, personal contact, and visitation methods accounted for 28.7 hours. The young-adult program (38.9 hours) included 19.6 percent of the total, whereas FFA (3.6 hours) represented only 1.8 percent of the total hours of instruction. No instruction in this subject was provided prior to the ninth grade.

The most instruction in the total day school program was provided to students in the western livestock area with 184.7 hours. Those instructors in the northeast dairy area provided the most instruction in the total young-adult farmer program (77.4 hours). Providing the most instruction in the FFA (6.0 hours) were those instructors in the western livestock and northeast dairy areas.

The total hours of instruction provided in economics of farm business management by secondary programs for 9th, 10th, 11th, and 12th grade students was 126.2 hours and ranged from 103.3 hours of instruction

in the eastern livestock area to 138.3 hours in the southern pasture area.

A mean of 6.9 hours of instruction was provided to 9th grade students. The mean hours provided 10th grade students was 8.0 hours. The 11th grade students received 60.3 hours of instruction in farm business management, whereas the 12th grade students were provided 51.0 hours of instruction. Records and record analysis was the most emphasized unit in all four secondary grades.

Significant differences (.05 level of significance) were found in the amounts of instruction provided to day students in farm credit (F-value = 3.2640), marketing (F-value = 2.8038), and records and record analysis (F-value = 3.4155) among the economic areas through small group, personal contact, and visitation methods.

Vocational agriculture instructors provided nearly one hour of instruction through small group, personal contact, and visitation methods for each four hours of classroom instruction provided at the day school level.

The one individual unit in which instruction was provided through the FFA in each economic area was records and record analysis with a mean of 1.1 hours.

The mean total hours of classroom instruction provided for young and adult farmers was 6.0 hours, of which records and record analysis was most emphasized. Significant differences (.05 level of significance) in the amounts of instruction by economic areas were observed in farm appraisal (F-value = 2.9303) and farm law (F-value = 2.5688).

The mean total hours of instruction for young and adult farmers provided through small group, personal contact, and visitation methods was 32.6 hours. The hours of instruction ranged from a low of 13.8 hours in the southern pasture area to 67.7 hours in the northeast dairy area. Vocational agriculture instructors provided nearly 5.5 hours of instruction through small group, personal contact, and visitation methods for each hour of classroom instruction provided at the young and adult farmer level.

Instructors with 6 to 10 years of teaching experience provided the most instruction in farm business management (240.7 hours), whereas the least instruction (168.7 hours) was provided by instructors who had from 1 to 5 years of teaching. Significant differences (.05 level of significance) in the amounts of instruction was proved in farmstead planning (F-value = 2.8558) among instructors with varying years of experience.

The larger the vocational agriculture enrollment, the more total hours of instruction was provided. Those departments with 57 or more students enrolled provided most instruction in 13 of the farm business management units, whereas those departments with 56 or less students enrolled provided most instruction in only four of the units.

Those instructors who provided most instruction in farm business management (215.4 hours) had completed 2 or less semesters of vocational agriculture, whereas those instructors who provided the least hours of instruction (182.8) had completed 8 or more semesters of vocational agriculture.

The largest amount of instruction in farm business management (203.6 hours) was provided by those instructors who had from 0 to 3 years of participation in 4-H.

A mean of 261.1 hours of instruction was provided in those departments in which 300 to 399 young and adult farmers had been enrolled. There were significant differences (.05 level of significance) in the amounts of instruction provided among departments with varying young and adult farmer attendance in planning cropping systems (F-value = 3.4553), farm credit (F-value = 3.2875), and farm buildings (F-value = 3.2417). Furthermore, significant differences were observed in amounts of instruction provided: (1) day students through small group, personal contact, and visitation methods; (2) young-adult farmer classes; (3) young-adult farmer small group, personal contact, and visitation methods; and (4) total young-adult farmer program.

The total hours of instruction in farm business management generally increased as the number of supervisory visits made by the instructor increased. Highly significant differences (.01 level of significance) in hours of instruction by instructors who made varying numbers of supervisory visits were observed: (1) in total hours of instruction (F-value = 5.4930), (2) in farmstead planning (F-value = 8.1481), and (3) in records and record analysis (F-value = 4.1142). Significant differences (.01 level of significance) were observed: (1) in farm appraisal (F-value = 3.0123), (2) in marketing (F-value = 3.5505), and (3) in farm buildings (F-value = 4.6400).

Highly significant differences (.01 level of significance) were

observed between the above comparisons in: (1) young-adult farmer small groups, personal contact, and visitation methods (F-value = 5.9994), and (2) young-adult farmer instruction program (F-value = 5.4713). The latter classification provided the widest range in hours of instruction.

The mean hours of instruction provided by county cooperative extension directors in economics of farm business management was 100.0 hours. The economic area in which the most instruction was provided was the cash grain area with a mean of 111.2 hours. The second highest economic area was the eastern livestock area with 106.9 hours. The western livestock area ranked third with 95.7 hours. The northeast dairy area ranked fourth and provided 95.1 hours. Providing the least instruction were the extension directors in the southern pasture area with 91.2 hours.

Those units that provided the most hours of instruction were: (1) planning the farm business, 34.7 hours; (2) records and record analysis, 19.2 hours; and (3) marketing, 18.3 hours. Those units that were provided the least hours of instruction were: (1) agricultural programs and agencies, 0.4 hours; (2) machinery management, 0.3 hours; (3) farm risk protection, 0.1 hours; (4) farm buildings, 0.1 hours; (5) farmstead planning, 0.1 hours; (6) agricultural organizations and agencies, 0.0 hours; (7) farm appraisal, 0.0 hours; and (8) labor management, 0.0 hours.

Instruction in records and record analysis ranged from 28.9 hours in the northeast dairy area to 38.3 hours in the cash grain and eastern livestock areas. Ranges in various instructional units among economic

areas include: (1) farm law, northeast dairy area (2.5 hours) to cash grain area (11.4 hours); (2) farm leases, northeast dairy area (4.2 hours) to cash grain area (6.7 hours); (3) planning livestock systems, western livestock area (1.8 hours) to eastern livestock area (7.7 hours); (4) farm safety, southern pasture area (2.9 hours) to cash grain area (5.8 hours); and (5) farm credit, eastern livestock area (1.6 hours) to northeast dairy area (5.8 hours).

The instructional unit of marketing ranged in hours from a low of 11.6 hours in the western livestock area to 33.3 hours in the northeast dairy area. Significant differences were observed in the amounts of instruction provided among the economic areas.

A mean of 97.6 hours of instruction in economics of farm business management was provided to adults through county cooperative extension service programs, whereas youth was provided with a mean of only 2.4 hours of instruction.

The range in youth instruction was from 1.3 hours provided in the northeast dairy area to 5.7 hours in the cash grain area. The most emphasis provided an instructional unit was farm safety with a mean of 0.7 hours and ranged from 0.1 hours in the eastern livestock and southern pasture areas to 2.3 hours in the cash grain area.

The mean total hours of instruction provided adults ranged from a low of 89.1 hours in the southern pasture area to 105.5 hours in the cash grain area. The mean hours of instruction in marketing ranged from 11.5 hours in the western livestock area to 33.3 hours in the northeast dairy area and produced an F-value of 2.8328, significant at the .05

level of significance. The individual unit that received the most emphasis (34.1 hours) was planning the farm business. The range in hours of instruction was from 28.3 hours in the northeast dairy area to 37.9 hours in the eastern livestock area.

The mean number of contacts made to youth and adults by county cooperative extension directors in economics of farm business management was 904.8. The contacts made in the various economic areas were: (1) eastern livestock area, 1625.5 contacts; (2) cash grain area, 987.6 contacts; (3) northeast dairy area, 762.2 contacts; and (5) southern pasture area, 603.9 contacts. The adult contacts (875.8) represented 96.8 percent of the total contacts made, whereas youth contacts made represented only 3.2 percent.

County extension directors with 1 to 5 years of experience provided the most instruction (121.5 hours), whereas those directors whose years of experience ranged from 6 to 10 years provided the least hours of instruction (83.0 hours). Directors with 1 to 5 years of experience provided the most instruction in planning the farm business (44.3 hours) and in records and record analysis (27.3 hours). Directors with 11 to 15 years of experience provided the most instruction in marketing (22.0 hours). The largest number of hours of youth instruction (3.3 hours) was provided by those directors with 16 or more years of experience.

Directors with 26 to 38 graduate credit hours provided 130.3 hours of instruction in farm business management. The least hours, 80.1 were provided by those directors with 13 to 25 graduate credit hours. Directors with 26 to 38 graduate credit hours provided the most

instruction in planning the farm business, 54.1 hours, whereas those directors with 39 to 51 hours provided the most instruction in marketing, 29.2 hours. The latter provided the least instruction to youth (0.8 hours).

A mean of 106.8 hours of instruction were provided by those directors who had completed 2 or less semesters of vocational agriculture. Directors who had completed from 3 to 7 semesters provided the least instruction. As the semesters of vocational agriculture completed by the director decreased, the number of hours of instruction in marketing decreased.

The largest amount of instruction in farm business management provided by those directors who had participated 8 or more years in 4-H was 106.4 hours. Directors who had participated from 4 to 7 years in 4-H provided the least instruction (89.0 hours) to adults, whereas those directors who had participated from 0 to 3 years provided the least instruction (1.4 hours) to youth.

The mean number of hours of instruction increased (from 67.3 to 163.8 hours) as the number of contacts made by the directors increased from 0 through 7,999 contacts to 24,000 or more. Analysis of variance tests revealed highly significant differences in amounts of instruction provided by directors with varying numbers of contacts made. A highly significant difference (.01 level of significance) in hours of instruction provided were noted in farm law (F-value = 6.9025) and farm safety (F-value = 6.3188) instruction, whereas a significant difference (.05 level of significance) was noted in records and record analysis

(F-value = 3.9924) and in farm leases (F-value = 2.8932) instruction.

The total hours of instruction stratified by varying number of contacts made ranged from 67.3 hours when the number of contacts made were from 0 to 7,999 to 163.8 hours when the number of contacts made were 24,000 or more.

Nine of the post-secondary area schools and/or community colleges provided 5,669 hours of instruction in economics of farm business management. The Ag-Tech day program accounted for 66 percent of the total instruction, whereas the veterans cooperative farm training program accounted for the remaining 34 percent of total hours of instruction. No instruction was provided in this subject through adult classes or short courses.

The instructional units most strongly emphasized were: (1) records and record analysis, 1,228 hours; (2) marketing, 767 hours; (3) planning the farm business, 664 hours; (4) farm credit, 482 hours; and (5) planning the cropping system, 349 hours.

The total hours of instruction provided by the nine area schools were: (1) Sheldon, 1,286 hours; (2) Calmar, 948 hours; (3) Emmetsburg, 674 hours; (4) Mason City, 649 hours; (5) Cedar Rapids, 634 hours; (6) Muscatine, 530 hours; (7) Council Bluffs, 484 hours; (8) Waterloo, 328 hours; and (9) Ankeny, 136 hours.

Records and record analysis were most emphasized by Sheldon, Calmar, Emmetsburg, Council Bluffs, and Muscatine. Marketing was most emphasized by Cedar Rapids, Mason City, and Ankeny, whereas planning the farm business was most emphasized by Waterloo.

The projected total hours of instruction provided for 231 vocational agriculture departments in Iowa was 45,999.4 hours, whereas the projected total hours of instruction provided by 100 county cooperative extension service programs was 10,000.0 hours. The nine area schools provided 5,669 hours and was the total program of instruction for the state. The combined projected total hours provided in 1970-71 to youth and adults was 61,268.4 hours. Vocational agriculture programs provided 74.4 percent, county cooperative extension service programs provided 16.3 percent, and post-secondary area school programs provided 9.3 percent of the total projected hours of instruction.

The results of this study suggest the need for vocational agriculture departments to provide training in natural resources occupations and provide more impetus in off-farm instruction as it relates to farm business management. To meet this challenge, there exists a need for comprehensive one-semester courses and increased amounts of individualized instruction.

Expanded programs implemented by post-secondary area schools are needed; however, coordination is needed to prevent overlapping or unnecessary duplication of programs. Area schools need to assess their role in respect to adult education.

Expansion of education and team teaching in farm records should be strongly considered by the three institutions. All institutions should reassess the importance of small group, personal contact, and visitation methods in improvement of instruction.

There exists in Iowa a large number of farms whose operators are

owners, part owners, or renters. These individuals are not now being provided adequate comprehensive adult training in farm business management. Personnel in the three institutions need to identify the clientele in their respective locations and develop curriculums to provide the instruction needed by these individuals.

Teacher education and Department of Public Instruction should provide undergraduate and graduate level mini-classes, workshops, and in-service programs to up-date instructors. These educational training services need to assist in providing instructional media and materials for the vocational agriculture instructors.

LITERATURE CITED

1. Anderson, Ober J. Competencies in farm credit needed by farmers. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1966.

2. Beaver, Ronald D. Competencies in farm labor utilization needed by farmers. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1967.

3. Bendixen, Joe F. Experimental evaluation of the effectiveness of projected transparencies on instruction in vocational agriculture. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1969.

4. Borcher, Sidney Dean. Experimental evaluation of demonstrations in teaching vocational agriculture. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1970.

5. Bundy, Clarence E. Curriculum reorganization to meet employment experience programs needs. Multilithed paper. Ames, Iowa, Agricultural Education Department, Iowa State University. ca. 1968.

6. Christy, James R. Competencies in farm business analysis needed by farmers. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1966.

7. Crawford, Harold R. Factors affecting the establishment of young farm operators in Iowa and implications for agricultural education. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1969.

8. Gil-Turnes, Julio B. An analysis of the one and two year vocational and technical programs in agriculture. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1970.

9. Hansen, Herbert E. Experimental evaluation of video-tape on instruction in vocational agriculture. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1971.

10. Harter, Walter G. The computer and linear programming as important instruments for decision making assistance for farmers. Unpublished Ph.D. thesis. Columbus, Ohio, Library, Ohio State University. 1967.

11. Hawkins, Layton S., Prosser, Charles A., and Wright, John C. Development of vocational education. Chicago, Illinois, American Technical Society. 1951.

12. Iowa. Code, 1966: 280A. 1966.

13. Iowa Department of Agriculture. Iowa Annual Farm Census, 1970. Iowa Division of Agricultural Statistics Bulletin No. 92-AF. 1970.

14. Iowa State University Cooperative Extension Service in Agriculture and Home Economics. Background of cooperative extension work in Iowa and provisions of the County Agricultural Extension Law. Iowa Cooperative Extension Service in Agriculture and Home Economics Pamphlet MA-379 (Rev.). 1970.

15. Kahler, Alan A. Factors related to the occupations of Nebraska farm male high school graduates. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1967.

16. Kruskop, LeRoy L. Competence in farm management needed by vocational agriculture instructors. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1966.

17. Lamers, Gerald R. Factors related to occupations of farm reared male graduates of the Earlham community high school. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1970.

18. McCollum, Earl. Agricultural education in the community college, philosophy and programs. The Agricultural Education Magazine 39, No. 5: 116, 119. November 1966.

19. McVey, Gary C. An experimental evaluation of the effectiveness of an audio-tutitorial method in teaching vocational agriculture. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1970.

20. Magill, William M. and Murray, William G. Land values rise 3½ percent in 1968. Iowa Farm Science 23, No. 8: 3-403-6-406. February 1969.

21. Monroe, Paul. Founding of the American public school system. New York, The Macmillan Company. 1940.

22. Nebraska Department of Education. Nebraska curriculum guide for agribusiness and natural resources occupations education. Multilithed paper. Lincoln, Nebraska, Agricultural Education Division, Department of Education. ca. 1970.

23. Nebraska, University of. School calendar 1970-1972. Bulletin. Curtis, Nebraska, School of Technical Agriculture. 1970.

24. Nielsen, Duane N. Relationship of high school vocational agriculture and size of home farm to establishment of graduates in farming. Unpublished Ph.D. thesis. Ames, Iowa, Library, Iowa State University. 1958.

25. Oklahoma Department of Vocational and Technical Education. Basic core curriculum for vocational agriculture I, II, III, IV. Multilithed Report 300. Stillwater, Oklahoma, Agriculture Education Division, Department of Vocational and Technical Education. 1971.

26. Pumper, Fred J. Determination of subject matter units taught in Wisconsin and the extent of contribution toward meeting the national objectives of vocational agriculture. Unpublished Ph.D. thesis. Madison, Wisconsin, Library, University of Wisconsin. 1968.

27. Roberts, Roy W. Vocational and practical arts education. 2nd ed. New York, Harper and Row Publishers. 1965.

28. Roberts, Roy W. Vocational and practical arts education. 3rd ed. New York, Harper and Row Publishers. 1971.

29. Smith, Wendell L. An examination of the cooperative cognation between vocational agriculture instructors and county extension agents in planning and conducting the adult prospectus of instruction in Oklahoma. Unpublished M.S. thesis. Stillwater, Oklahoma, Library, Oklahoma State University. 1968.

30. Snedecor, G. W. and Cochran, W. G. Statistical methods. 6th ed. Ames, Iowa, Iowa State University Press. 1967.

31. Stevens, Glenn Z. Instruction areas in agriculture. The Agricultural Education Magazine 39, No. 5: 104, 105, 110. November 1966.

32. Tindall, Lloyd W. Relation of class size and department enrollment to effectiveness of selected instructional media in vocational agriculture. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1969.

33. Trees, Tim P. Opportunities for establishment of young farmers in farming in the Ventura community school district. Unpublished M.S. thesis. Ames, Iowa, Library, Iowa State University. 1969.

34. True, Alfred C. A history of agricultural education in the United States, 1785-1925. U.S. Department of Agriculture, Miscellaneous Publication 36. 1929.

35. True, Alfred C. A history of agricultural extension work in the United States, 1785-1923. U.S. Department of Agriculture, Miscellaneous Publication 15. 1928.

36. U.S. Bureau of Census. Census of agriculture, 1969. Area reports, Vol. 1, Part 16: 1. Washington, D.C., U.S. Government Printing Office. 1972.

37. U.S. Congress. 63rd, 2nd Session. Agricultural Extension (Smith-Lever) Act of 1914, Public Law 740. Washington, D.C., U.S. Government Printing Office. 1914.

38. U.S. Congress. 64th, 1st Session. Vocational Education (Smith-Hughes) Act of 1917, Public Law 347. Washington, D.C., U.S. Government Printing Office. 1917.

39. U.S. Congress. 74th, 2nd Session. Vocational Education (George-Deen) Act of 1936, Public Law 673. Washington, D.C., U.S. Government Printing Office. 1936.

40. U.S. Congress. 79th, 2nd Session. Vocational Education (George-Barden) Act of 1946, Public Law 586. Washington, D.C., U.S. Government Printing Office. 1946.

41. U.S. Congress. 88th, 1st Session. Vocational Education Act of 1963, Public Law 88-210. Washington, D.C., U.S. Government Printing Office. 1963.

42. U.S. Department of Health, Education, and Welfare. Administration of vocational education, rules and regulation. Vocational Educational Bulletin Number 1, revised 1966. Washington, D.C., Office of Education. 1967.

43. U.S. Office of Education. Education for a changing world of work. Washington, D.C., U.S. Government Printing Office. 1963.

ACKNOWLEDGMENTS

Special appreciation is expressed to Professor Clarence E. Bundy, Chairman of my Graduate Committee, for his understanding, guidance, and direction during my graduate program.

Special recognition is given to Dr. Lauren L. Christian, Dr. Alan A. Kahler, Dr. Ray J. Bryan, and Dr. Thomas A. Hoerner, members of my graduate committee, for their time and assistance in guiding my graduate program.

The author is very appreciative of the cooperation received from the vocational agriculture instructors, county cooperative extension directors, and post-secondary personnel involved in the study.

The author would like to express his appreciation to Ed, Clark, Maylon, Harold, and Windol for their cooperation and assistance.

Acknowledgment is made of the funds received through a research grant from the Iowa Agricultural Experiment Station to assist in the completion of this study.

Special appreciation is expressed to my immediate supervisor for his patience and cooperation during the completion of the study and to my Ames neighbors for their generous hospitality this past year.

A very sincere thanks and deep appreciation is expressed to my parents for their patience, understanding, and encouragement throughout my graduate program and study.

APPENDIX A: LETTERS

Iowa State University of Science and Technology Ames, Iowa 50010

Department of Agricultural Education
220 Curtiss Hall
Telephone: 515-294-5872

April 9, 1971

A study to determine the content and emphasis in public supported agricultural education programs in Iowa is being conducted jointly by staff members in the Department of Agricultural Education and in the Agriculture Experiment Station at Iowa State University in co-operation with the Career Education Division of the Department of Public Instruction. A limited number of vocational agriculture departments are being invited to participate in the study. Your department is one to which we are extending an invitation.

Your assistance will permit us to determine the time allocated to the instruction in the following agriculture units in the day school, FFA, and young-adult farmers programs: animal science, agronomic science, agricultural mechanics, economics of farm business management, agribusiness management, personal and leadership development, family living, and natural resources and environmental control. We will also gather information concerning you and your local situation which may influence curriculum emphasis.

With rapid changes in agricultural technology and in the manpower needs both in production and off-farm agriculture, it is imperative that instructional programs in agriculture at all levels be updated. It is hoped that the initial stage of this study will provide information needed to develop curriculum guides for future programs in agribusiness instruction.

Your participation as one of 75 instructors in the project will consist of filling out a short questionnaire concerning yourself and your local department, and the completion of a more detailed schedule concerning your instructional program. This will be done largely when you attend one of two meetings to be held on Saturday, May 1 or on Saturday, May 15. We anticipate the meetings getting underway at 9:00 in the morning in the high school vocational agriculture departments listed and ending at noon or shortly thereafter.

Will you please check the appropriate square on the enclosed self-addressed post card and return same at your earliest convenience. Your consideration of our invitation to participate in this project is very much appreciated.

Sincerely yours,

C. E. Bundy, Chairman
Department of Agricultural Education

Gerald Barton, Consultant
Elementary-Secondary Career Education

CB/jab

Iowa State University of Science and Technology Ames, Iowa 50010

Department of Agricultural Education
220 Curtiss Hall
Telephone: 515-294-5872

June 29, 1971

A study to determine the content and emphasis in public supported agricultural education programs in Iowa is being conducted jointly by staff members in the Agriculture Experiment Station and in the Department of Agricultural Education at Iowa State University in cooperation with the Career Education Division of the Department of Public Instruction. Random samples of County Extension Personnel and Vocational Agriculture Instructors, and personnel in all area schools are being invited to participate in this study.

With rapid changes in agricultural technology and in the manpower needs both in production and off-farm agriculture, it is imperative that instructional programs in agriculture at all levels be relevant as to needs of agricultural workers. It is hoped that the initial stage of this study will provide information needed to develop curriculum guides for future programs in agribusiness instruction.

The information recorded on your weekly activity reports will assist us in determining the time allocated to the educational activities in the county and/or counties in the areas of animal science, agronomic science, agricultural mechanics, economics of farm business management, agribusiness management, and personal and leadership development.

Your participation in the project will consist of completing the attached extension personnel questionnaire and returning it in the enclosed envelope at your earliest convenience.

Your cooperation and assistance in this project will be greatly appreciated.

Sincerely yours,

C. E. Bundy.

C. E. Bundy, Chairman
Department of Agricultural Education

Roger L Lawrence

Roger L. Lawrence, Coordinator
Extension Personnel Training

Iowa State University of Science and Technology Ames, Iowa 50010

Department of Agricultural Education
220 Curtiss Hall
Telephone: 515-294-5872

May 28, 1971

A study to determine the content and emphasis in public supported agricultural education programs in Iowa is being conducted jointly by staff members in the Department of Agricultural Education and in the Agriculture Experiment Station at Iowa State University in cooperation with the Career Education Division of the Department of Public Instruction. Random samples of Vocational Agriculture Instructors and County Extension Directors, and personnel in all area schools are being invited to participate in this study.

Your assistance will permit us to determine the time allocated to the instruction in animal science, agronomic science, agricultural mechanics, economics of farm business management, agribusiness management and personal and leadership development in area schools in Iowa. We will also gather information concerning you and your local situation which may influence curriculum emphasis.

With rapid changes in agricultural technology and in the manpower needs both in production and off-farm agriculture, it is imperative that instructional programs in agriculture at all levels be revelant as to needs. It is hoped that the initial stage of this study will provide information needed to develop curriculum guides for future programs in agribusiness instruction.

Your participation in the project will consist of filling out a questionnaire concerning yourself and your programs. It will also involve a questionnaire to your staff members concerning the content and emphasis in their instructional program.

Your consideration of our invitation to participate in this project will be greatly appreciated. Further communications will follow by telephone.

Sincerely yours,

C. E. Bundy

C. E. Bundy, Chairman
Department of Agricultural Education

Gerald R. Lamers

Gerald R. Lamers, Consultant
Post Secondary Career Education Division

APPENDIX B: QUESTIONNAIRES

SECONDARY SCHOOL QUESTIONNAIRE

A. Teacher Information

201

1. Name _____

2. Age _____

3. Reared: Please check (✓)
   _____1) In Iowa
   _____2) State contiguous to Iowa
   _____3) Elsewhere (Describe) _____

4. Check (✓) type of agricultural background:
   _____1) Cash grain
   _____2) Beef
   _____3) Swine
   _____4) Dairy
   _____5) Other farm
   _____6) Diversified farm
   _____7) Off-farm agriculture
   _____8) Off-farm non-agriculture

5. Marital status:
   _____1) Single
   _____2) Married
   _____3) Divorced
   _____4) Widowed
   _____5) Separated

6. Number of children:
   _____1) Boys
   _____2) Girls

7. Full total number of years vocational agriculture teaching experience in:
   _____1) Present school
   _____2) In Iowa
   _____3) Outside Iowa

8. _____Total graduate credits (quarter hours) earned beyond B. S. degree

9. Graduate credits (quarter hours) earned within the last five years in:
   _____1) Technical agriculture
   _____2) Agricultural education
   _____3) Education

10. _____Full years of employment other than teaching since graduation from high school

11. Of these, how many years were spent doing the following:
   _____1) Operating a farm
   _____2) Working on a farm
   _____3) Employed in business and industry
   _____4) Self-employed in business and industry
   _____5) Military
   _____6) Other (Describe) _____

12. Number of months employed while in college (summer included) in the following:
   _____1) Farming
   _____2) Off-farm agriculture
   _____3) Other (Describe)

13. _____Semesters of vocational agriculture completed in high school

14. _____Years of participation in 4-H

B. School Information

1. Size of school district or service area in square miles _____

2. Instructor time devoted to vocational agriculture: (✓)
   _____1) 1/2
   _____2) 1/4
   _____3) 7/8
   _____4) Full
   _____5) Other

3. High school enrollment in grades 9 - 12 _____

	% Farm	% Non-Farm
a) Male _____	_____	_____
b) Female _____	_____	_____

4. Enrollment in vocational agriculture:

	Farm		Non-Farm		Total
	Boys	Girls	Boys	Girls	
a) Pre-career	___	___	___	___	___
b) 9th grade	___	___	___	___	___
c) 10th grade	___	___	___	___	___
d) 11th grade	___	___	___	___	___
e) 12th grade	___	___	___	___	___

5. Total attendance of classes held for out-of-school youth and adults:
   (Example - 10 meetings with average attendance of 20 equals 200 total attendance)

   _____1) Male

   _____2) Female

6. Age and size of facilities:

   a) Total square feet _____

   b) Acres in land laboratory _____

	Square Feet
c) Classroom	_____
1) Storage	_____
2) Laboratory	_____
d) Agr. mech. lab	_____
1) Storage	_____
e) Other lab	_____
f) Office	_____
g) Storage	_____

General Information

Name _____

School _____

Class periods:

	Length or period	Periods per week
Below 9th Grade	_____	_____
Vo-Ag I or 9th	_____	_____
Vo-Ag II or 10th	_____	_____
Vo-Ag III or 11th	_____	_____
Vo-Ag IV or 12th	_____	_____
Agribusiness	_____	_____
Other _____	_____	_____
_____	_____	_____

Average number of supervisory visits per student per year _____

Total number of supervisory visits _____

For day school _____

For young-adult classes _____

	Subject	Undergraduate	Graduate
Credits (quarter hours) earned in:	animal science	_____	_____
	agronomic science	_____	_____
	agricultural engineering	_____	_____
	economics and farm management	_____	_____

Personal Information
County Extension Personnel

1. Name _____

2. Age _____

3. Reared: Please check (✓)
   _____1). Iowa
   _____2). State bordering Iowa
   _____3). Elsewhere - Please identify _____

4. Type of background: Please check (✓)
   _____1). Cash grain
   _____2). Beef
   _____3). Dairy
   _____4). Swine
   _____5). Other farm livestock
   _____6). Diversified farm
   _____7). Off-farm, agriculture
   _____8). Off-farm, non-agriculture

5. Marital status: Please check (✓)
   _____1). Single
   _____2). Married
   _____3). Divorced
   _____4). Widowed
   _____5). Separated

6. Number of children:
   _____1). Boys
   _____2). Girls

7. Number of years in county extension service
   _____1). Present position
   _____2). Iowa
   _____3). Elsewhere

8. _____ Total graduate credits (quarter hours)* earned beyond the B.S. degree.

9. Graduate credits (quarter hours)* earned within the last <u>five</u> years:
   _____1). Technical agriculture
   _____2). Agricultural education
   _____3). Education
   _____4). Home Economics
   _____5). Home Economics Education

10. _____ Semesters of Vocational Agriculture completed in high school.

11. _____ Semesters of Home Economics completed in high school

12. _____ Years of participation in 4-H as a club member.

* To convert semester hours to quarter hours multiply semester hours by 1.5.

13. _____Years of employment other than county extension service since graduation from high school.

14. Of these, how many were spent doing the following:

_____1). Production agriculture experiences
_____2). Off-farm business and industry experiences
_____3). Non-agriculture business and industry experiences
_____4). Teaching
_____5). Other public service occupations
_____6). Military
_____7). Housewife
_____8). Other - Specify_____

_____

15. Percentage of total professional time devoted to teaching technical agriculture, family living, and personnel and leadership development in county or counties of your responsibility. (Please note definition and example)

DEFINITION: When responsibilities are divided between two or more counties, percentage of time allocated per county should be recorded as its percentage in relation to all counties served.

EXAMPLE:

Percentage	County A	County B	County C
10			
20	✓		
30			✓
40			
50		✓	
60			
70			
80			
90			
100			

Percentage	Counties (Please list those you serve)				
	_____	_____	_____	_____	_____
10					
20					
30					
40					
50					
60					
70					
80					
90					
100					

AREA SCHOOL INSTRUCTOR INFORMATION

1. Name _____

2. Age _____

3. Reared: Please check (✓)

_____1) In Iowa
_____2) State bordering Iowa
_____3) Elsewhere (Describe) _____

4. Check (✓) type of agricultural background:

_____1) Cash grain
_____2) Beef
_____3) Swine
_____4) Dairy
_____5) Other farm
_____6) Diversified farm
_____7) Off-farm agriculture
_____8) Off-farm non-agriculture

5. Marital status: Please check (✓)

_____1) Single
_____2) Married
_____3) Divorced
_____4) Widowed
_____5) Separated

6. Number of children:

_____1) Boys
_____2) Girls

7. Number of years area school agriculture teaching experience:

_____1) Present area school
_____2) Iowa's area school (Total years)
_____3) Area schools outside of Iowa

8. Number of years other teaching experience:

_____1) High school vocational agriculture
_____2) Other: Subject _____years_____
_____years_____

9. Check (✓) type of post-secondary formal education:

_____1) Short term conference and/or workshop only
_____2) One or more quarters college training; however no degree
_____3) Associate of Arts or its equivalent
_____4) Bachelor of Science
_____5) Master of Science
_____6) Doctor of Philosophy

13. _____ Full years of employment other than teaching since graduation from high school.

14. Of these, how many years were spent doing the following:

_____1) Operating a farm
_____2) Working on a farm
_____3) Employed in business and industry
_____4) Self-employed in business and industry
_____5) Military
_____6) Other (Describe) _____

_____

15. Number of months employed while in college (summer included) in the following:

_____1) Farming
_____2) Off-farm agriculture
_____3) Other (Describe) _____

_____

16. _____ Semesters of vocational agriculture completed in high school.

17. _____ Years of participation in 4-H.

18. Instructor time devoted to agricultural curriculum: Please check ( ).

_____1) 1/4
_____2) 1/2
_____3) 3/4
_____4) 7/8
_____5) Full
_____6) Other: Please specify _____

19. Supervisory visits; (Please indicate number)

	Average number of visits per student	Total number of Visits
a) Ag-Tech Day Program	_____	_____
b) Veterans Cooperative Farm Training	_____	_____
c) Other Programs (Adult Classes & Short Courses)	_____	_____

AREA SCHOOL INFORMATION

1. Area school enrollment: (Please indicate number)

	Ag-Tech Day Program	Veterans Cooperative Farm Training	Other Programs *
a) Male	_____	_____	_____
b) Female	_____	_____	_____
c) Number of students that are not high school graduates	_____	_____	_____

*Total attendance of adult classes and short courses (Example - 10 meetings with average attendance of 20 equals 200 total attendance)

2. Facilities:

a) Acres in land laboratory _____

b) Total square feet of facilities _____

	Square Feet	Age (approximate)
c) Classroom	_____	_____
1) Storage	_____	
2) Laboratory	_____	
d) Agricultural mechanics laboratory	_____	_____
1) Storage	_____	
e) Other laboratories	_____	_____
f) Office	_____	
g) Storage	_____	

APPENDIX C: SURVEY FORMS

Economics of Farm Business Management

	Day School Program						FFA	Young-Adult Program	
	Below 9th Grade	Vo-Ag I or 9th	Vo-Ag II or 10th	Vo-Ag III or 11th	Vo-Ag IV or 12th	Small Group, Personal, Visitation		Classes	Small Group, Personal, Visitation
1. Agricultural Organizations and Agencies									
2. Agricultural Programs and Polices									
3. Farm Appraisal									
4. Farm Credit									
5. Farm Risk Protection									
6. Farm Law									
7. Farm Leases									
8. Farm Safety									
9. Marketing									
10. Labor Management									
11. Farm Buildings									
12. Farmstead Planning									
13. Machinery Management									
14. Planning Cropping Systems									
15. Planning Livestock Systems									
16. Planning the Farm Business									
17. Records and Record Analysis									
18. Other Major Areas not Listed, Specify:									

Economics of Farm Business Management

Name of county_____

	Youth		Adults	
	Hours	30%	Hours	30%
1. Agricultural organizations and agencies				
2. Agricultural programs and policies				
3. Farm appraisal				
4. Farm credit				
5. Farm risk protection				
6. Farm law				
7. Farm leases				
8. Farm safety				
9. Marketing				
10. Labor management				
11. Farm buildings				
12. Farmstead planning				
13. Machinery management				
14. Planning cropping systems				
15. Planning livestock systems				
16. Planning the farm business				
17. Records and record analysis				
Total				

Number of contacts Youth _____ Adults _____

Economics of Farm Business Management

Instructor's Name _____

Course Title _____

	Ag-Tech Day Program				Veterans Cooperative Farm Training				Other Programs	
	First Year	Second Year	Employ. Supr.	Youth Groups	First Year	Second Year	Third Year	On-farm visitation	Adult Classes	Short Courses
1. Agricultural Organizations and Agencies										
2. Agricultural Programs and Policies										
3. Farm Appraisal										
4. Farm Credit										
5. Farm Risk Protection										
6. Farm Law										
7. Farm Leases										
8. Farm Safety										
9. Marketing										
10. Labor Management										
11. Farm Buildings										
12. Farmstead Planning										
13. Machinery Management										
14. Planning Cropping Systems										
15. Planning Livestock Systems										
16. Planning the Farm Business										
17. Records and Record Analysis										
18. Other major areas not listed Specify:										